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AUTHORITY

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PHASE IV PERFORMANCE TEST OF THE F-86F-40 AIRPLANE EQUIPPED WITH 6 x 3-INCH LEADING EDGE SLATS AND 12-INCH EXTENSIONS ON THE WING TIPS

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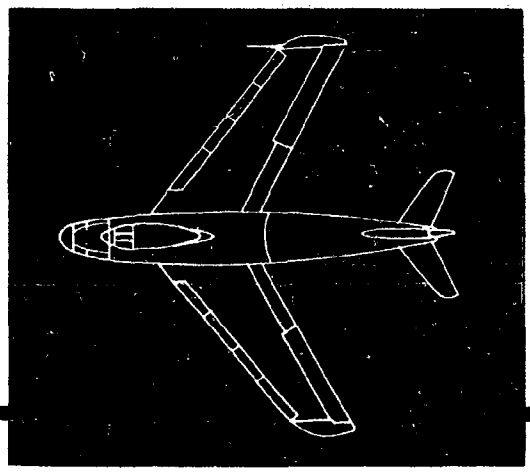
AIR FORCE FLIGHT TEST CENTER
EDWARDS AIR FORCE BASE, CALIFORNIA
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE



PHASE IV PERFORMANCE TEST F-86F-40

EQUIPPED WITH 6 x 3-INCH LEADING EDGE SLATS AND 12-INCH WING TIP EXTENSIONS

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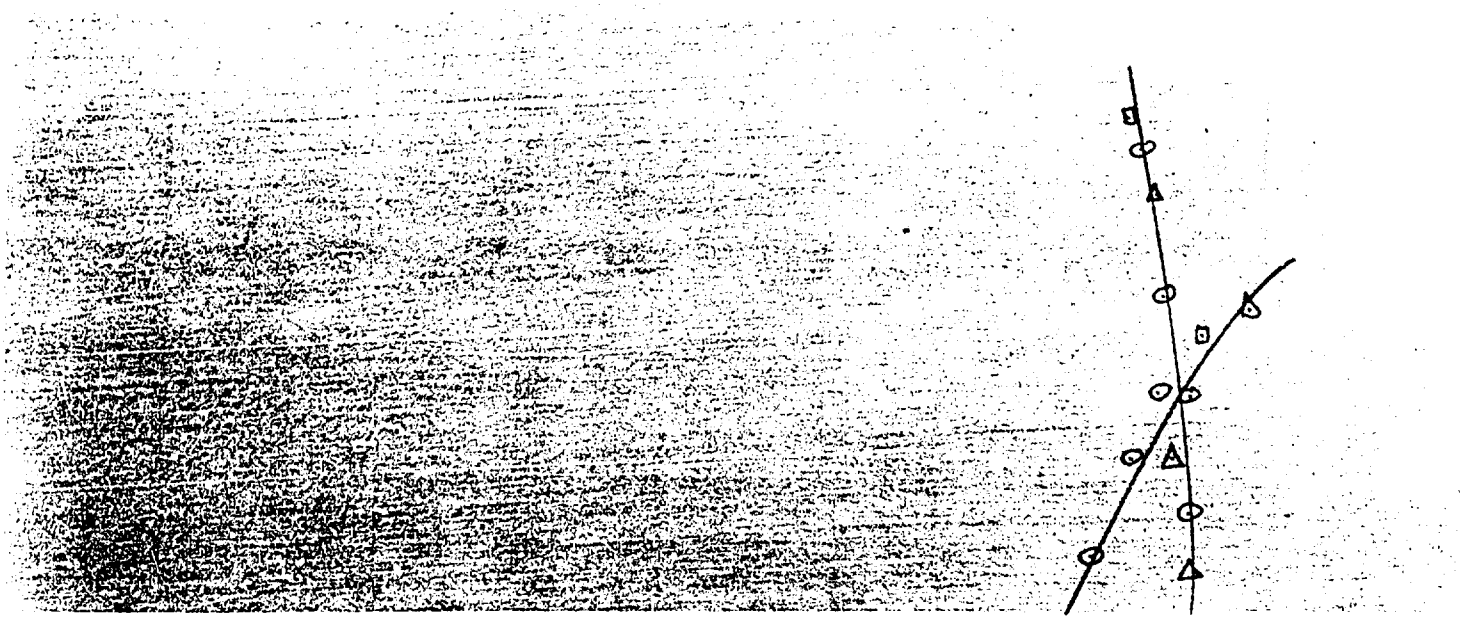

abstract

Worthwhile improvements in performance and flying characteristics are obtained from the 6x3 leading edge slat and the extended wing tips installed on the F-86F. Take-off and landing speeds are lower; runway requirements have been reduced. Improvement in maneuvering capability at altitudes above 25,000 feet is substantial. Combat radius or range and the high speed have been increased. These improvements have been achieved without creating any undesirable characteristics.

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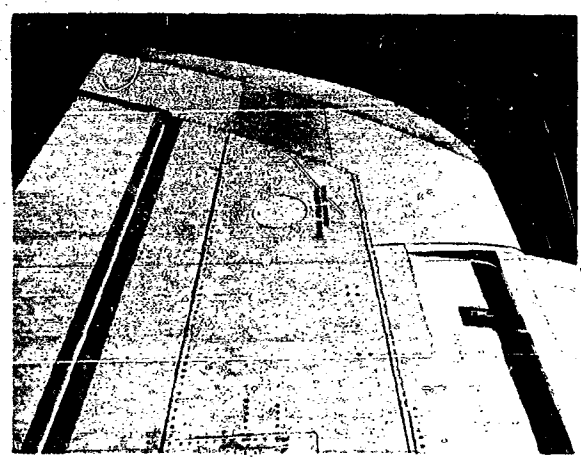


introduction

This report presents the results of performance flight tests of the F-86F-40 airplane, S/N 55-3817, equipped with 6 x 3-inch leading edge slats and 12-inch extensions on the wing tips. The results of this test are compared with Phase IV results for an unmodified airplane (with the solid 6 x 3-inch leading edge) and with the data presented in the Flight Handbook for the modified aircraft.

These tests were conducted under the authority of ARDC Test Directive No. 5581-F1, dated 18 August 1955.

The flight tests were performed at the Air Force Flight Test Center, Edwards Air Force Base, during the period 13 January 1956 to 27 February 1956. The program consisted of 15 flights, totaling 16:35 hours. Two of these flights were made in addition to those required for the original program: one with two 200-gallon drop tanks and one during which combat was simulated with an unmodified F-86F.

There are two significant modifications incorporated in the F-86F-40 airplane used for these tests:

1. The solid 6 x 3-inch leading edge of earlier models has been replaced with a full span slat with side rollers which preserves the original contour of the 6 x 3-inch leading edge when closed but slides forward to open a slot during maneuvering or slow flight.

2. The area, span, and aspect ratio of the wing have been increased and the MAC has been moved to the rear by a 12-inch extension of each wing tip. The extension is of the same airfoil section and taper ratio as the basic wing.

The gross weight given in the Flight Handbook for both the modified and unmodified airplanes at engine start with full internal fuel and 1800 rounds of ammunition but with no external stores is "approximately" 15,175 pounds.

The modified airplane was actually lighter than the unmodified airplane (both with test instrumentation complete). Additional ballast was used to obtain a gross weight at engine start of 15,150 pounds for the modified airplane as compared to 15,120 pounds for the unmodified airplane. With two 200-gallon tanks installed and fuel, the gross weight at engine start was 18,350 pounds. These weights are based on a fuel weight of 6.5 pounds per gallon.

test results

take-off and initial climb

The addition of the slats and tip extensions eliminates the yaw and roll tendencies at low speeds and reduces the stalling speed of the airplane, permitting lower take-off speeds and significantly reducing the take-off distance requirements. These reduced distances agree with the values published in the Flight Handbook for the clean and two 200-gallon tanks configurations. Take-off distances at optimum take-off speeds and sea level standard no-wind conditions are presented in the following table for comparison of the performance of the modified and unmodified aircraft (Ref 1: Page 2, Appendix I) as well as with Flight Handbook data (Ref 2: Page A-11).

OPTIMUM TAKE-OFF PERFORMANCE

Military Power, Full Flaps, Clean Configuration

	WEIGHT	TRUE T.O. SPEED-KTS	IND T.O. SPEED-KTS	GRD ROLL-FT	DISTANCE TO CLEAR 50-FT OBSTACLE-FT
Modified Aircraft	14,955	115	105	2000	3000
Handbook	14,800	115	107	1900	3200
Unmodified Aircraft	14,920	129	123	2700	3900
Two 200-Gallon Tanks					
Modified Aircraft	18,130	123.5	114	3060	4750
Handbook	17,900	125	118	2950	4500
Unmodified Aircraft	18,060	138	135	3800	5300

*Based on one take-off.

The take-offs obtained during the test program, reduced to standard day, sea level, no-wind conditions, are presented in Figure 1 of Appendix I.

All take-offs were made from a concrete runway with flaps full down and power stabilized at 100 percent prior to brake release. The center of gravity at take-off (clean configuration) was 22 percent MAC. The take-off speeds were intentionally varied to permit better evaluation of the performance characteristics.

climb

The climb performance has not been affected to any great degree by the addition of slats and extended wing tips. The test results are in close agreement with the Flight Handbook values but do show a slight reduction in performance when compared with the results of tests on the unmodified airplane. This reduction can be attributed to the reduced thrust of the present engine and to the Flight Handbook airspeed schedule used in the climbs. Sample values from the present test, tests of the unmodified aircraft (Ref 1: Fig. 1), and the Flight Handbook (Ref 2: Page A-27) are tabulated below for comparison. All data is presented for a standard day at similar initial weights.

COMPARISON OF CLIMB PERFORMANCE

	20,000 FT			30,000 FT			45,000 FT		
	TIME* MIN	DIST N.M.	FUEL** LBS	TIME* MIN	DIST N.M.	FUEL** LBS	TIME* MIN	DIST N.M.	FUEL** LBS
Modified Aircraft	2.9	22	275	5.4	45	415	14.0	110	700
Flight Handbook	3.0	25	325	5.0	45	495	14.0	110	850
Unmodified Aircraft	2.8	22	270	5.2	40	430	13.0	100	720

The continuous climbs were made with military power on the airspeed schedule outlined in the Flight Handbook. Approximately 550 pounds of fuel were required for engine start, taxi, take-off, and acceleration to best climb speed. The acceleration time from brake release to best climb speed (which included an immediate climb of approximately 1200 feet) was 2.5 minutes. The performance obtained during these tests, corrected to standard day conditions, is presented in Figure 2, Appendix I, and is summarized in the following table.

CLIMB PERFORMANCE

ALTITUDE FEET	RATE OF CLIMB FT/MIN	T/C* MIN	FUEL** USED — LBS	CALIBRATED AIRSPEED — KTS	TRUE AIRSPEED — KTS
S.L.	8,000	2.5	550	500	500
10,000	6,650	3.8	685	440	500
20,000	5,010	5.4	825	378	498
30,000	3,420	7.9	965	310	490
40,000	1,650	11.9	1,125	250	480
45,000	700	16.5	1,255	220	470
47,500	200	22.3	1,400	210	465

level flight

The present modifications have produced a general increase in range at all power settings with a pronounced increase at cruise and lower settings. The improvement in range increases with altitude. Although the airplane was not instrumented to provide thrust data for a drag evaluation, the increase in range, particularly at higher angles of attack, indicates a reduction in drag due to increased aspect ratio. The estimated data in the Flight Handbook tends to follow the results of the previous Phase IV tests of the unmodified airplane This data is too conservative for the modified airplane as seen in Figures 3 and 4 of Appendix I, and in the following table.

RELATIVE CRUISE PERFORMANCE

		MODIFIED ACFT		UNMODIFIED ACFT*		FLIGHT HANDBOOK** (ESTIMATED DATA)	
	ALTITUDE FEET	NAM/LB	TAS %	NAM/LB	TAS %	NAM/LB	TAS %
Clean Configuration	10,000	.164	332 79	.164	346 79		
	35,000	.329	407 82	.310	442		
	45,000	.391	466 91	.367			
Two 200 Gallon Tanks	35,000	.268	424 89	.25			

*Ref 1: Figures 18, 13, 19, 14, Appendix I

**Ref 2: Page 4.46, A-52; Recommended no-wind cruise

The range data for this airplane, plotted as nautical air miles per pound of fuel versus Mach number for standard conditions, is presented in Figres 5 and 6 of Appendix I.

The evaluation of speed characteristics was influenced to some extent by the relatively low thrust of the test engine. While an increased speed would be expected in conjunction with the increased range, the only increase during these tests occurred at high power settings. Since the range parameters, nautical air miles per pound of fuel versus true airspeed or Mach number, are more independent of particular engine characteristics than speed versus rpm, it is concluded that the drag has been reduced and that a higher speed potential is present in the modified airplane. However, for direct comparison the test results, reduced to standard conditions, the results of the tests on the earlier unmodified model, and the estimated data from the Flight Handbook are presented as calibrated airspeed versus rpm in Figure 7 of Appendix I. True airspeeds available at various altitudes are presented in the following table.

COMPARISON OF TRUE SPEEDS AT ALTITUDE

	MODIFIED AIRCRAFT				UNMODIFIED AIRCRAFT	
	ALTITUDE FEET	RPM	TRUE AIRSPEED KT	WEIGHT	TRUE AIRSPEED KT*	WEIGHT
Clean Configuration	10,000	7950	580	14,000	573.5	14,030
		7560	552		564.5	
		6760	430		446	
		5920	271		279.5	
	35,000	7950	527	13,500	529	13,470
		7550	520.5		522	
		7150	506		509	
		6950	493		500	
		6160	293		—	
	45,000	7950	528	13,200	519	13,220
		7550	505		507	
		7150	450		455	
		6960	403		—	
Two 200 Gallon Tanks	35,000	7950	507	16,200	496	15,860
		7240	458		469.5	
		6830	397		399	

*Obtained from Figure 18, Appendix I of Reference 1. Figure 8 of that report (Speed versus Altitude) contains errors.

Figures 8, 9, and 10 of Appendix I present standard data for the modified airplane in the form of speed versus altitude for various power settings in the clean configuration and Mach number versus corrected rpm for the clean and tank configurations.

The reduction in drag at high coefficients of lift due to the increased aspect ratio and the smoother flow of air behind the opening slats has reduced the minimum power required at all altitudes and has moved the minimum power points to lower airspeeds. Thus the maximum endurance has been increased but the optimum airspeeds are lower than for the unmodified airplane. These characteristics are evident in Figure 7 where the curves extend to lower airspeeds and power settings, and in Figures 3 and 4 where these lower speeds provide a decided increase in range.

■ stabilized level turn capabilities

The turning capabilities of the aircraft while in a stabilized turn at constant power setting, airspeed, and altitude were evaluated at 35,000 feet. The highest rate of turn and least radius were obtained at approximately 0.7 Mach number. The slats were cracked open for Mach numbers below approximately 0.75 and would reach full open at about 0.5.

The test results, reduced to standard conditions and one weight, are presented in Figure 11 of Appendix I and are summarized below.

MACH NO.	LOAD FACTOR "g"	RATE OF TURN °/SEC	RADIUS OF TURN N.M.
.6	1.44	3.3	1.60
.7	1.76	3.9	1.55
.8	1.63	3.0	2.3
.9	1.33	1.8	4.5

buffet and stall boundaries

The addition of slats and extended wing tips has produced marked improvement in all characteristics associated with buffet or stall. This is qualified only by the early appearance of a mild buffet during accelerated maneuvers at high Mach numbers.

During simulated combat with an unmodified aircraft, this aircraft repeatedly demonstrated definite superiority. In one situation the pilot was able to reverse position from ahead to astern in 450 degrees of turn.

With a low Mach number and a gradually increasing load factor, the slats open, buffet builds up, and the stall occurs. At a high Mach number, mild buffet commences first, dies as the slats open, and reappears before the stall. The early, mild, buffet is not severe enough to interfere with an operational pass. In the clean configuration the limit load factors (7.0 G) is obtainable at 30,000 feet with a Mach number of approximately 0.90. The characteristics with empty 200-gallon tanks attached are similar at slightly lower load factors.

The peak rate of turn at 30,000 feet and above, both clean and with empty tanks, occurs between 0.8 and 0.85 Mach number. The radii of turn are small at low Mach numbers and remain small until past a Mach number near 0.7, where they begin to increase with Mach number. The best combination of high turn rate and low radius is near a Mach number of 0.8.

The slats tend to open much more evenly and gradually than they did in the early models of the F-86F which had slats with no side rollers. There are still occasional unequal openings and subsequent mild snap tendencies. There is also a tendency to oscillate into and out of the stall, making it difficult to fly on the stall boundary. These oscillations (a series of pitch-ups and automatic recoveries) rapidly reduce the airspeed. Continuous maximum performance is obtained by holding a load factor just short of the stall boundary.

The stall boundaries for all altitudes and configurations tested are presented in Figure 12 of Appendix I. The results of two stalls at 16,000 feet are included but are not discussed here since limit load factor is the flight boundary at significant Mach numbers. These results and those in the following figures are for standard conditions at the given altitude.

The boundaries for slats full open, buffet and stall, the apparent coefficients of lift, and the rates and radii of turn at the stall are presented in Figures 13, 14, and 15 for the clean configuration at 35,000 feet, for the clean configuration at 45,000 feet, and for the tank configuration at 35,000 feet. One apparent coefficient of lift line was faired for each event which holds for all altitudes. This causes slight departure from the test points in the separate curves but provides an optimum evaluation of standard performance. Figure 12 shows the effect of this technique.

The present modifications eliminate the yaw and roll tendencies at low airspeeds and extend the low speed range of the airplane. During unaccelerated flight in the clean configuration, slats crack at a calibrated airspeed of 205 knots and are full open at 150 knots. With 200-gallon tanks, these events occur at 230 and 163 knots. The stall warning (buffet) in both configurations is positive, leading the stall by several knots. The airplane is easily controlled during the stall and recovery is positive.

Representative examples of the stalls which were accomplished are presented in the following tables.

ACCELERATED STALLS

CONFIG	CLEAN						LANDING		200 GAL. TANKS	
Weight-Lbs	12,700		12,700		12,660		12,830		14,270	
Ind Alt-Ft*	46,490		36,825		10,250	10,375	9,750	9,850	8,075	
EVENT	BUFFET	STALL	BUFFET	STALL	BUFFET	STALL	BUFFET	STALL	BUFFET	STALL
IAS-Kn*	122	115.5	115.5	111.5	105.5	101.5	98	89	112.5	103.5

*Corrected for instrument error.

CONFIG	ALTITUDE FEET	WEIGHT POUNDS	MACH NO.	LOAD FACTOR SLATS OPEN — G	LOAD FACTOR BUFFET — G	LOAD FACTOR STALL — G
Clean	16,000	12,900	.50	—	—	5.4
	16,000	12,900	.55	—	—	6.05
Clean	35,000	13,370	.6	2.2	2.6	3.2
	35,000	13,370	.7	3.0	3.2	4.2
	35,000	13,370	.8	3.9	3.4	5.1
	35,000	13,370	.9	4.9	2.4	5.5
Clean	45,000	13,140	.6	(1.2)	(1.6)	2.0
	45,000	13,140	.7	1.9	2.1	2.6
	45,000	13,140	.8	2.5	2.2	3.2
	45,000	13,140	.9	(3.1)	(1.5)	(3.4)
Two 200-Gal Tanks	35,000	14,900	.6	1.6	2.2	2.7
	35,000	14,900	.7	2.5	2.7	3.6
	35,000	14,900	.8	3.5	2.7	4.5

*From faired final results; parentheses indicate extrapolated values.

■ landing

The landing distance requirements are less than for the unmodified airplane and are in proportion to the lower approach and touchdown speeds made possible by the reduced stalling speeds and better low-speed handling characteristics. Although the

test results are not as optimistic as the Flight Handbook, the difference lies in the braking roll. A comparison with the ground roll distances of the previous tests on the unmodified airplane shows the braking action during these tests to be only moderate. Therefore, it is believed that under optimum conditions the performance of the modified airplane will approach that given in the Flight Handbook. The gain in handling qualities at low airspeeds is of equal importance.

The test landings, reduced to standard day, sea level, no-wind conditions, are presented in Figure 16 of Appendix I. The optimum performance obtained for the modified and unmodified (Ref 1: Page 16, App. I) airplanes and the Flight Handbook data (Ref 2: Page A-30) are tabulated below.

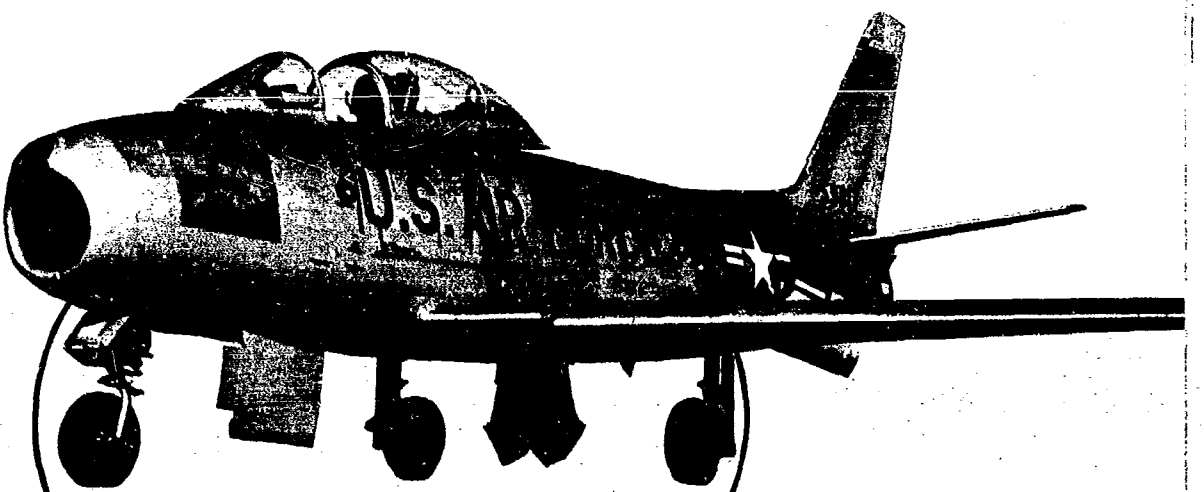
	GROSS WEIGHT LBS	TRUE AIRSPEED AT TOUCHDOWN KNOTS	IAS AT T.D. KNOTS	GROUND ROLL FEET	TOTAL DISTANCE FROM 50 FT HEIGHT FEET
Modified Airplane	12,700	108	100	2350	3750
Flight Manual	12,000	106	(100)	1750	3100
Unmodified Aircraft	12,930	120	120	2850	4380

thrust calibration

The engine used during these tests was slightly low in thrust and (during the speed-power tests) fuel flow. These characteristics influenced the speed versus rpm and nautical air miles per pound of fuel versus speed (or Mach number) results. The results of the three static thrust runs are presented in Figure 17. The fuel flow curves developed during the speed-power tests are presented in Figure 18, Appendix I.

airspeed calibration

The airspeed calibration results for this aircraft agree with those obtained during the earlier tests of the unmodified airplane. The calibration curves, Figure 19 of Appendix I, were used for the airspeed and altitude corrections made to maneuvering flight data. These corrections are only approximate since the effects of increased angle of attack at a given indicated airspeed are not included. The resulting slight error in Mach number leads to the use of the term "apparent coefficient of lift" for accelerated maneuvers.



conclusions

The modifications produce general improvement in take-off and landing performance, maneuvering capabilities, flight range, speed range, and low speed handling qualities with no loss of performance in other categories.

The Flight Hand Book is pessimistic in cruising flight estimates and slightly optimistic in landing performance.

recommendations

It is recommended that,

1. The modifications incorporated on the test aircraft be retrofitted to all F-86F aircraft.

2. The Flight Handbook values for the modifield airplane cruise performance be revised.

appendix I

table of contents

bibliography

1. Phase IV Performance Flight Tests of the F-86F Airplane, USAF No. 52-4349. May 1954.
2. Flight Handbook, USAF Series F-86F Aircraft (T.O. IF-86F-1). 16 September 1955.
3. Standardization of Take-off performance Measurements for Airplanes, AFFTC Technical Note R-12.
4. Flight Test Engineering Manual, Air Force Technical Report No. 6273 (Revied). May 1951.

test techniques and data analysis methods

Recording of Data: All data, except take-off and landing time histories, were taken by hand either directly by the pilot or over the radio by the engineer. There were no recording devices in the airplane or on the ground.

Drag Polar: In the few instances where corrections toward standard conditions required changes in drag with altered lift coefficients, the drag polar of the unmodified airplane (Ref. 1: Figure 39) was used.

Thrust Calibration: The methods and theory of Section 3, Reference 4, were used to correct the data from three thrust runs to engine performance parameters. The results are plotted in Figure 18 of this appendix.

Thrust Correction: When thrust or engine rpm corrections were necessary, a ram efficiency of 95 percent was assumed and engine curves of Fn/δ_{t_2} versus $N/\sqrt{T_n}$, which were obtained for the previous Phase IV tests (Reference 1) were used.

Take-Off: The reduction methods of Reference 3 were used on data obtained by Akeley photo theodolite. Flaps were full down and the engine stabilized at military power prior to brake release.

Climbs: The data was obtained during continuous climbs at military power on the airspeed schedule outlined in the Flight Handbook. The analysis methods of Section 5, Reference 4, were used with two exceptions: the thrust corrections were made using Fn/δ_2 rather than Fn/δ_a, with subsequent modifications to the reduction technique, and the standard exhaust gas temperatures, T_{0_s}, were found from a plot of test values of T_0/θ_2 versus $N/\sqrt{\theta_2}$.

$T_{0_s} = (T_0/\theta_2) \times \theta_{2_s}$; T_0/θ_2 at $N/\sqrt{\theta_{2_s}}$

Level Flight: The analysis methods of Section 4, Reference 4, were used except that pre-calculations of altitudes required to place the aircraft at constant W/δ conditions (which included instrument and position errors) were used to eliminate most of the corrections to the data. The curve of $W_f/\sqrt{\theta_2}\delta_2$ versus $N/\sqrt{\theta_2}$, faired through test points, which was used to correct fuel flows to standard conditions, is shown in Figure 19.

Stabilized Level Turn Capabilities: After stabilizing in a level turn with military power and at the desired Mach number, the airspeed and altitude were held while 360 degrees of turn were timed. This Δt was used to calculate a test load factor and apparent coefficient of lift. The corrections to apparent coefficient of lift for non-standard temperature and thrust, and consequently drag, were made as outlined in the sections on thrust corrections and drag polars. Then, with the corrected C_L and standard W/δ, a standard load factor was obtained. The term "apparent coefficient of lift" is used because the airspeed calibration obtained during unaccelerated flight was used in correcting the data obtained under these accelerated conditions. The resulting coefficients are not precise but serve as a reference.

$$n_t = \sqrt{0.1087(v_T/\Delta t)^2 + 1^1}$$

$$C_{L_t} = \frac{.000675\ n_t\ w_t}{M_t^2\ s\ \delta_t}$$

$$n_s = \frac{C_{L_C} M_t^2 S}{.000675(w/\delta)_s}, \text{ where}$$

n: Load Factor, G

v_t: True Airspeed, Knots

Δt: Time for 360 degree Turn, see

then $\Delta t_s = \dfrac{V_{t_s}}{\sqrt{9.2(n_s^2 - 1)^1}}$

$w_s = 360/\Delta_{t_s}$, rate of turn, °/sec

$r_s = \dfrac{V_{t_s} \times 0.0159}{w_s}$, radius of turn, N.M.

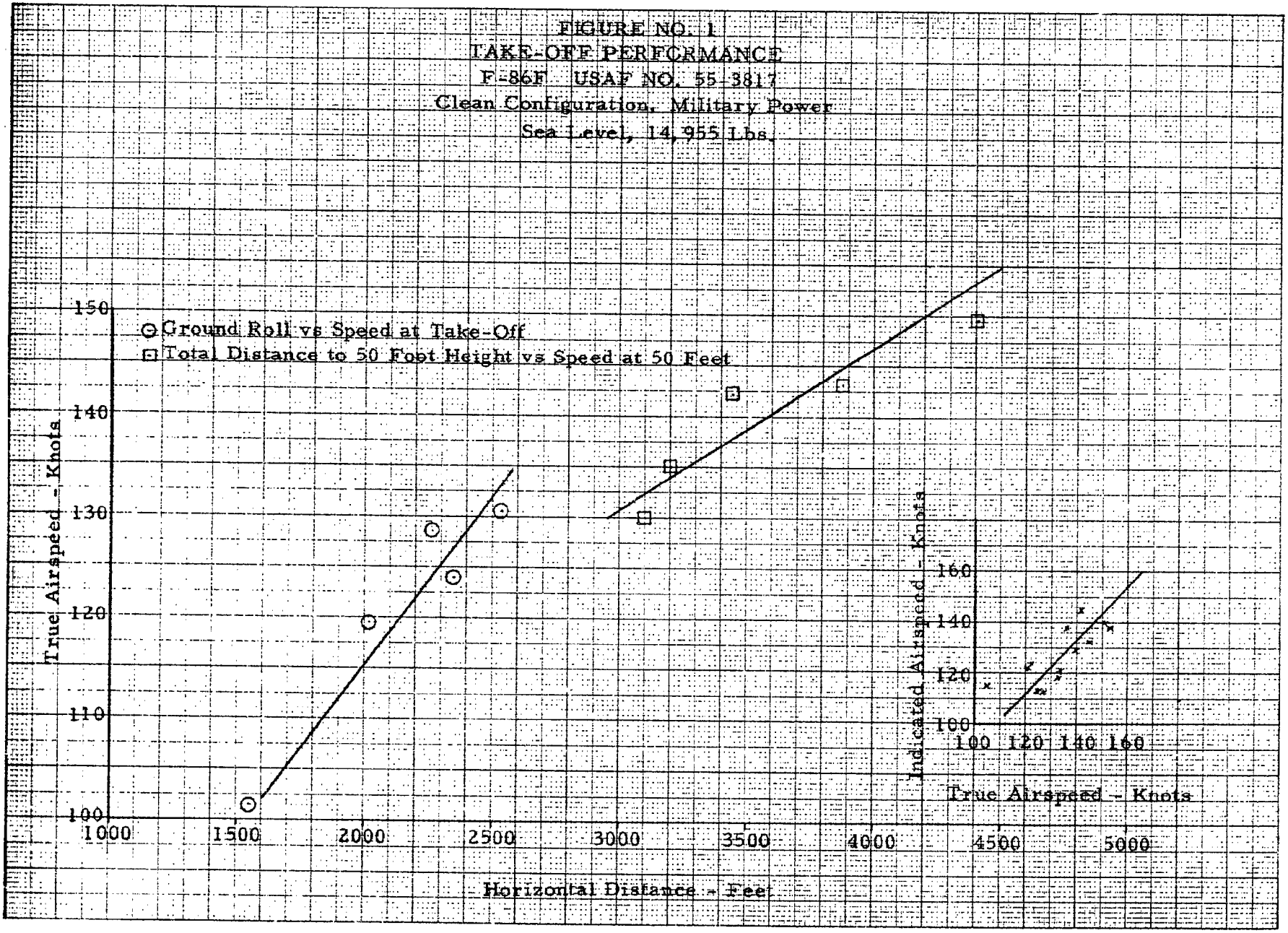
Buffet and Stall Boundaries: Diving turns at military power and constant indicated Mach number were used to evaluate the maneuvering capabilities. The turns were gradually tightened as the various events, slat cracking, slat open, buffet, and stall were encountered and recorded. The data for each point was reduced as for stabilized level turns except that

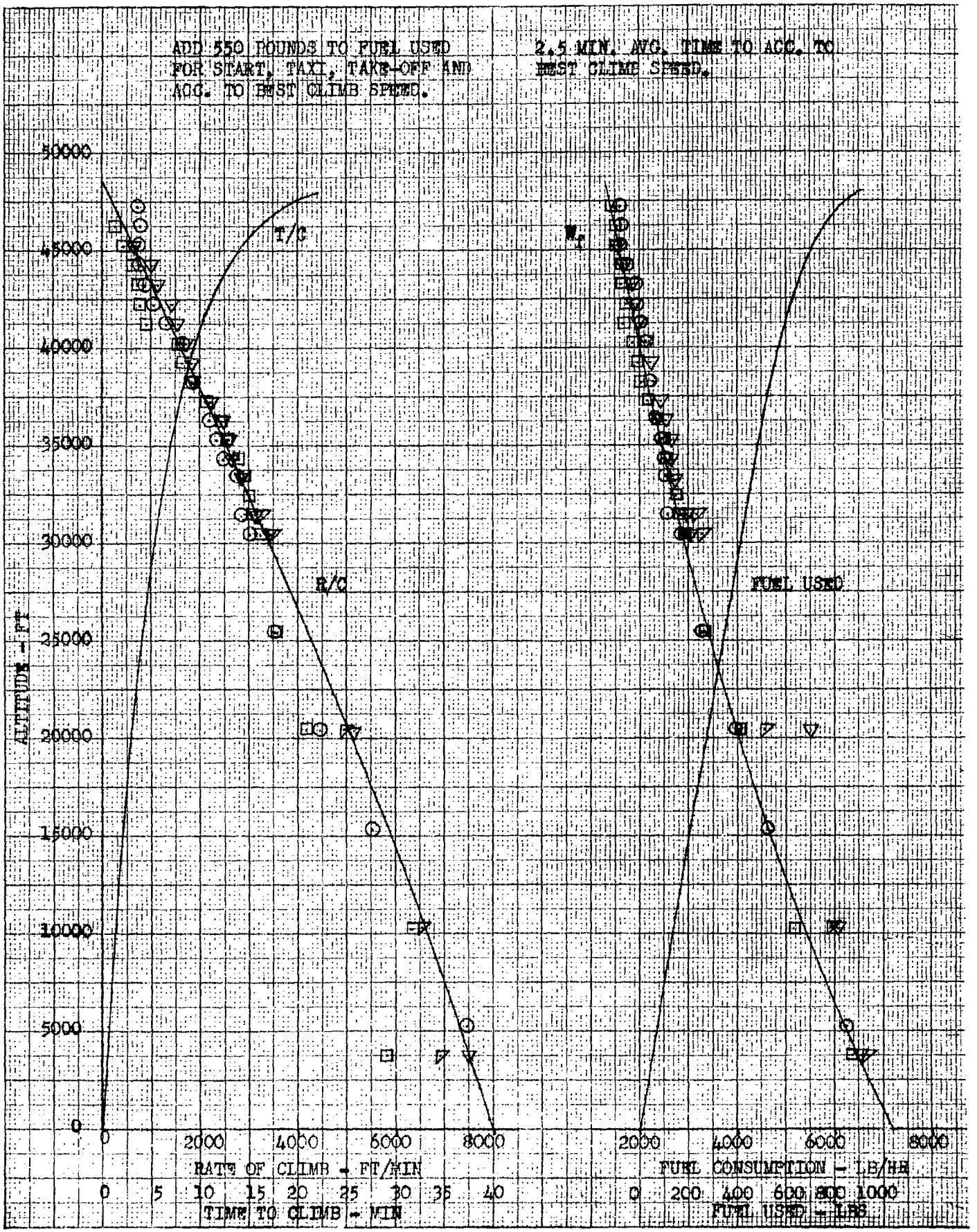
no corrections were made for non-standard thrust, and the observed load factor was used rather than observed rate of turn.

Unaccelerated Stalls: The unaccelerated stalls were made at low cruise power settings, straight ahead, with a bleed-off of approximately 1 knot per second. No corrections were made except for instrument and position errors. Where attempts were made to correlate the results with the buffet and stall boundaries, corrections were made to the appropriate W/δ.

Landings: The analysis method of Section 6.4, Reference 4, was used to reduce the data obtained from an Akley photo theodolite.

FIGURE NO. 1
TAKE-OFF PERFORMANCE
F-86F USAF NO. 55-3817
Clean Configuration, Military Power
Sea Level, 14,955 Lbs.




ADD 550 POUNDS TO FUEL USED FOR START, TAXI, TAKE-OFF AND ACC. TO BEST CLIMB SPEED.
2.5 MIN. AVG. TIME TO ACC. TO BEST CLIMB SPEED.
T/C
R/C
W_f
FUEL USED
ALTITUDE - FT
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
0
2000
4000
6000
8000
RATE OF CLIMB - FT/MIN
0
5
10
15
20
25
30
35
40
TIME TO CLIMB - MIN
2000
4000
6000
8000
FUEL CONSUMPTION - LB/HR
0
200
400
600
800
1000
FUEL USED - LBS

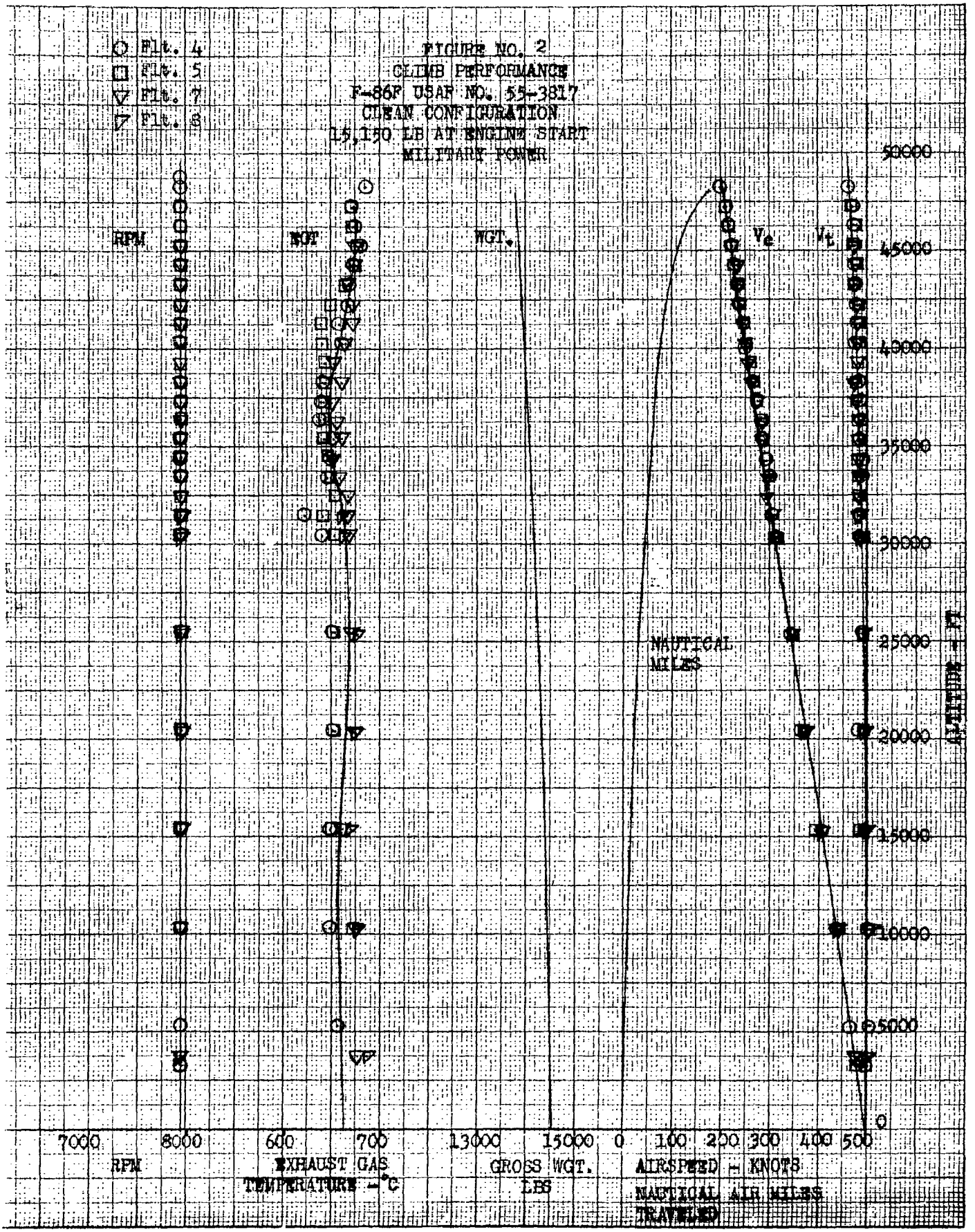

○ Flt. 4
□ Flt. 5
▽ Flt. 7
▽ Flt. 8
FIGURE NO. 2
CLIMB PERFORMANCE
F-86F USAF NO. 55-3817
CLEAN CONFIGURATION
15,150 LB AT ENGINE START
MILITARY POWER
RPM
EGT
WGT.
V_e
V_t
NAUTICAL MILES
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
7000
8000
600
700
13000
15000
0
100
200
300
400
500
RPM
EXHAUST GAS TEMPERATURE - °C
GROSS WGT. LBS
AIRSPEED - KNOTS
NAUTICAL AIR MILES TRAVELED

FIGURE NO. 3
COMPARISON OF
NAUTICAL AIR MILES PER POUND OF FUEL
vs
TRUE AIRSPEED
F-86F USAF NO. 55-3817
Clean Configuration

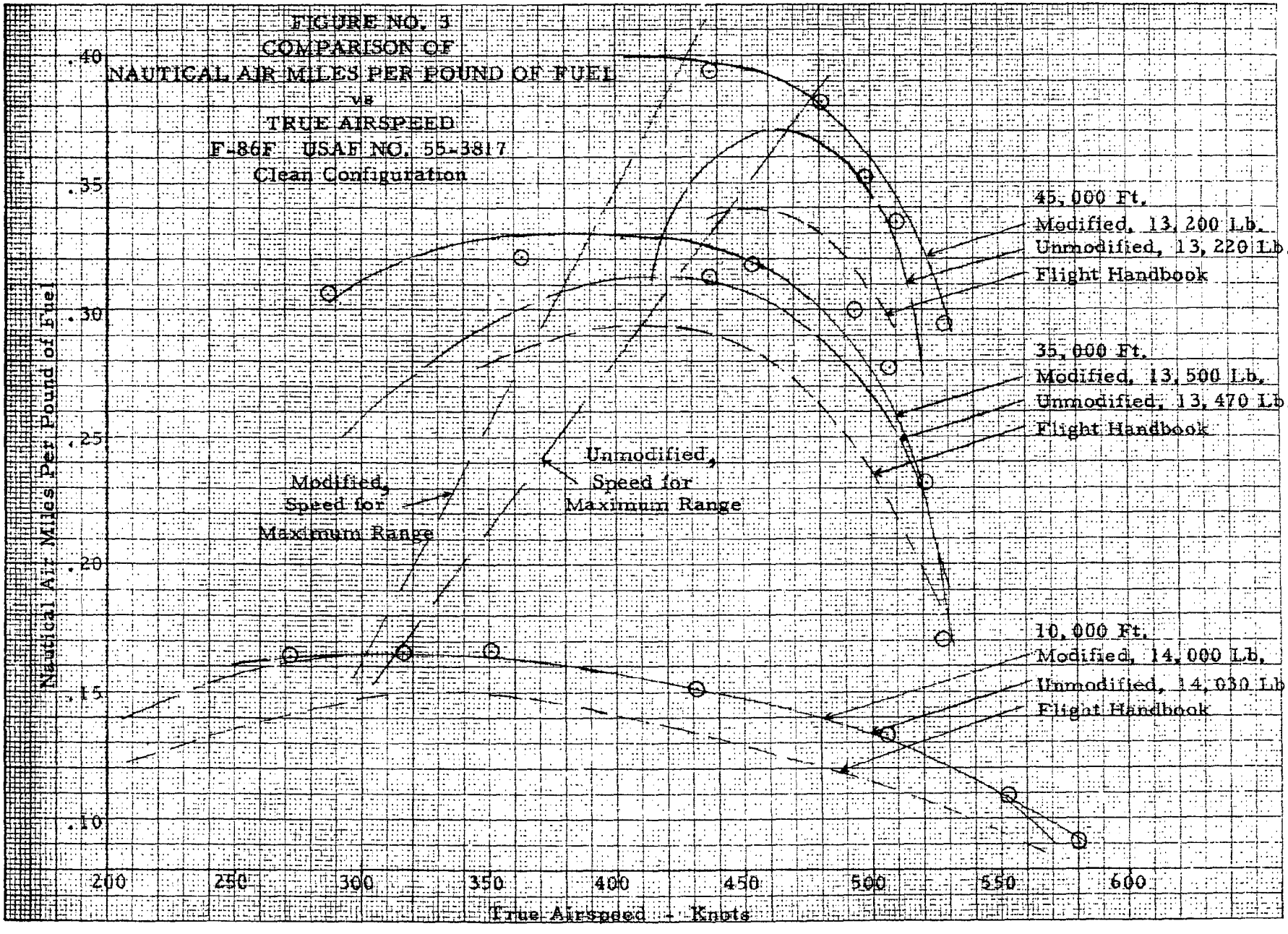


FIGURE NO. 4
COMPARISON OF
NAUTICAL AIR MILES PER POUND OF FUEL
vs
TRUE AIRSPEED
F-86F USAF NO. 55-3817
2 x 200 Gallon Tanks, 35,000 Ft.

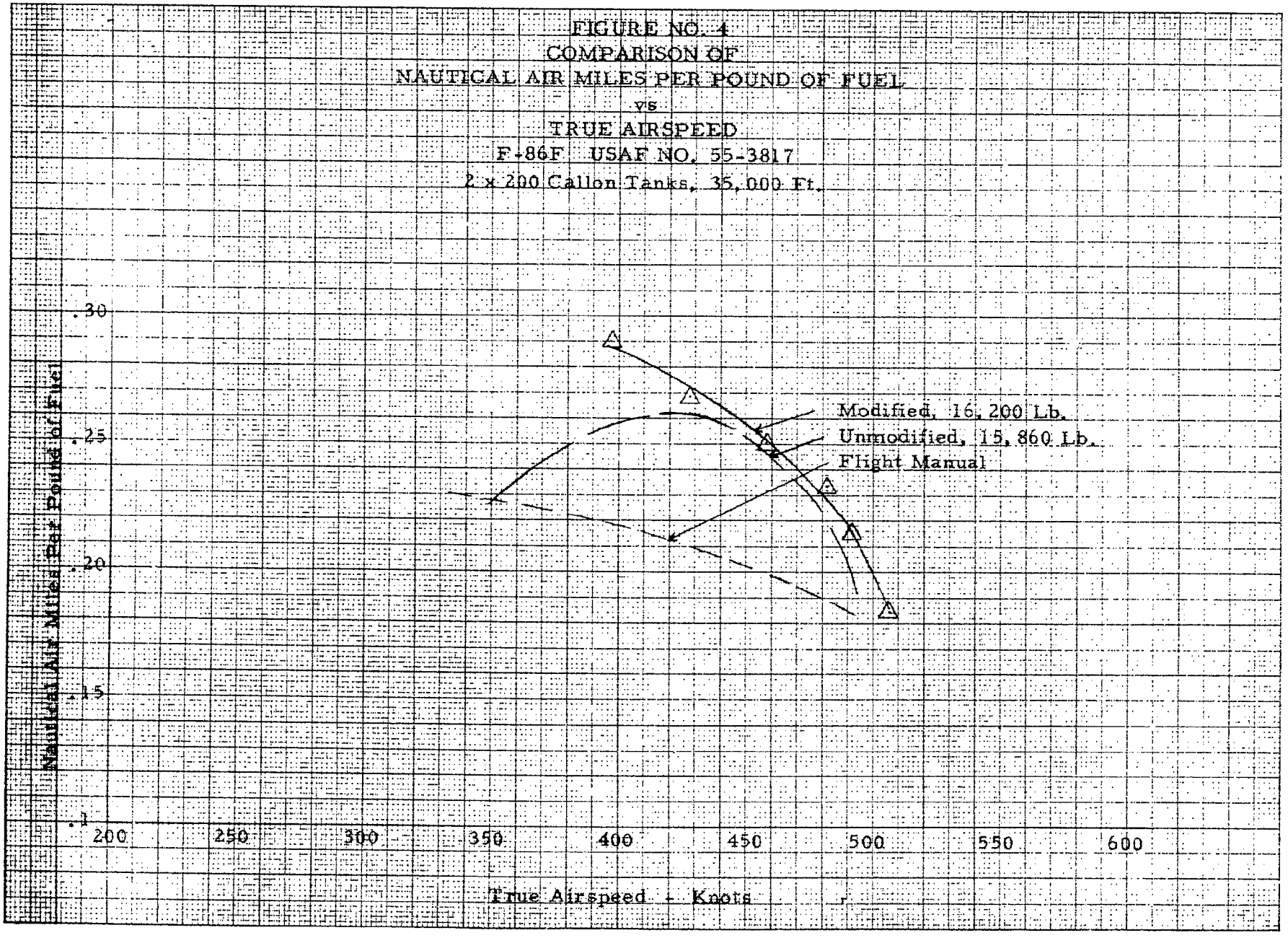


FIGURE NO. 5

NAUTICAL AIR MILES PER POUND OF FUEL

vs

MACH NUMBER

F-86F USAF NO. 55-3817

Clean Configuration

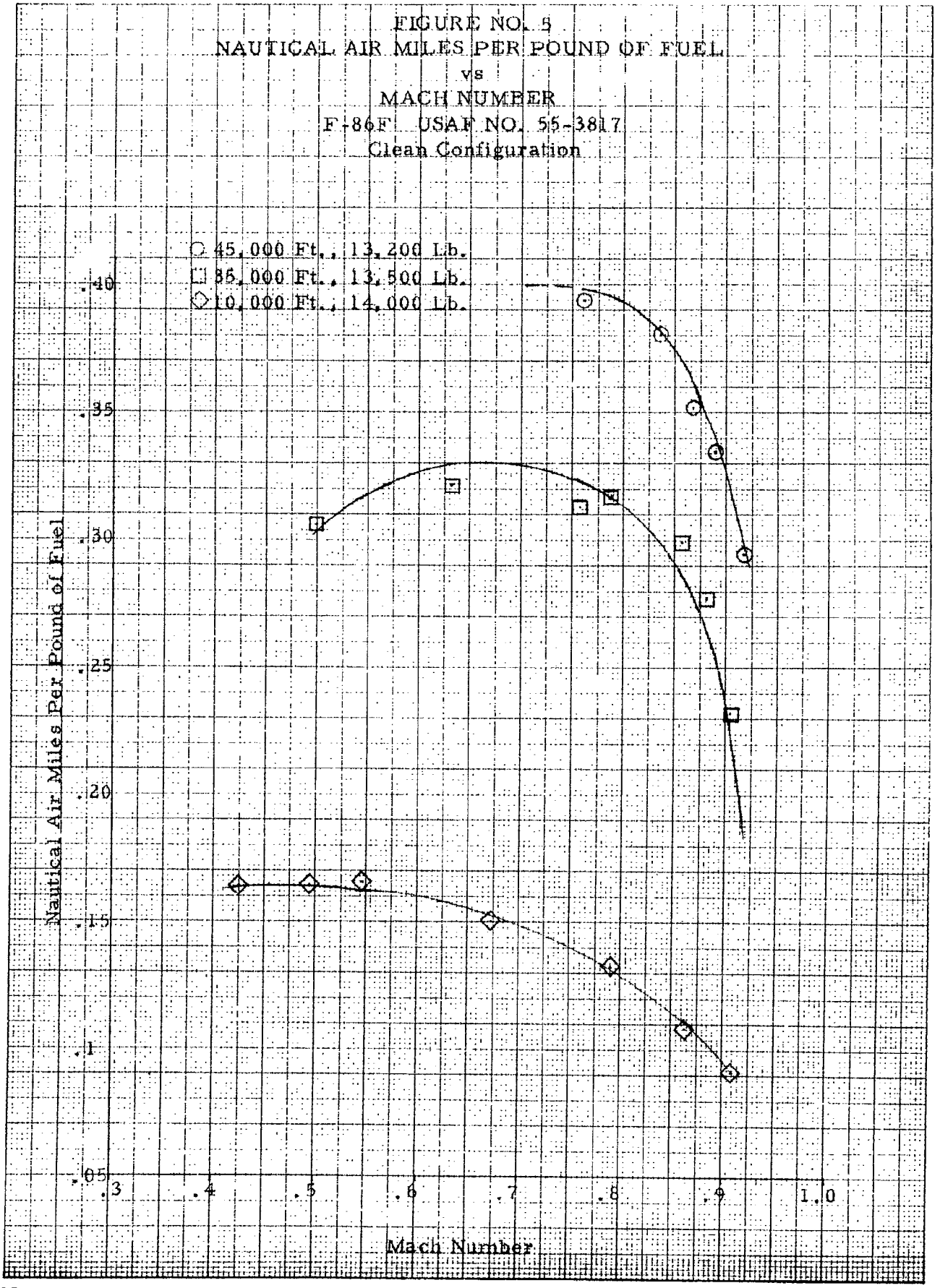


FIGURE NO. 6
NAUTICAL AIR MILES PER POUND OF FUEL
vs
MACH NUMBER
F-86F USAF NO. 55-3817
35,000 Ft., 16,200 Lb
2 x 200 Gallon Tanks

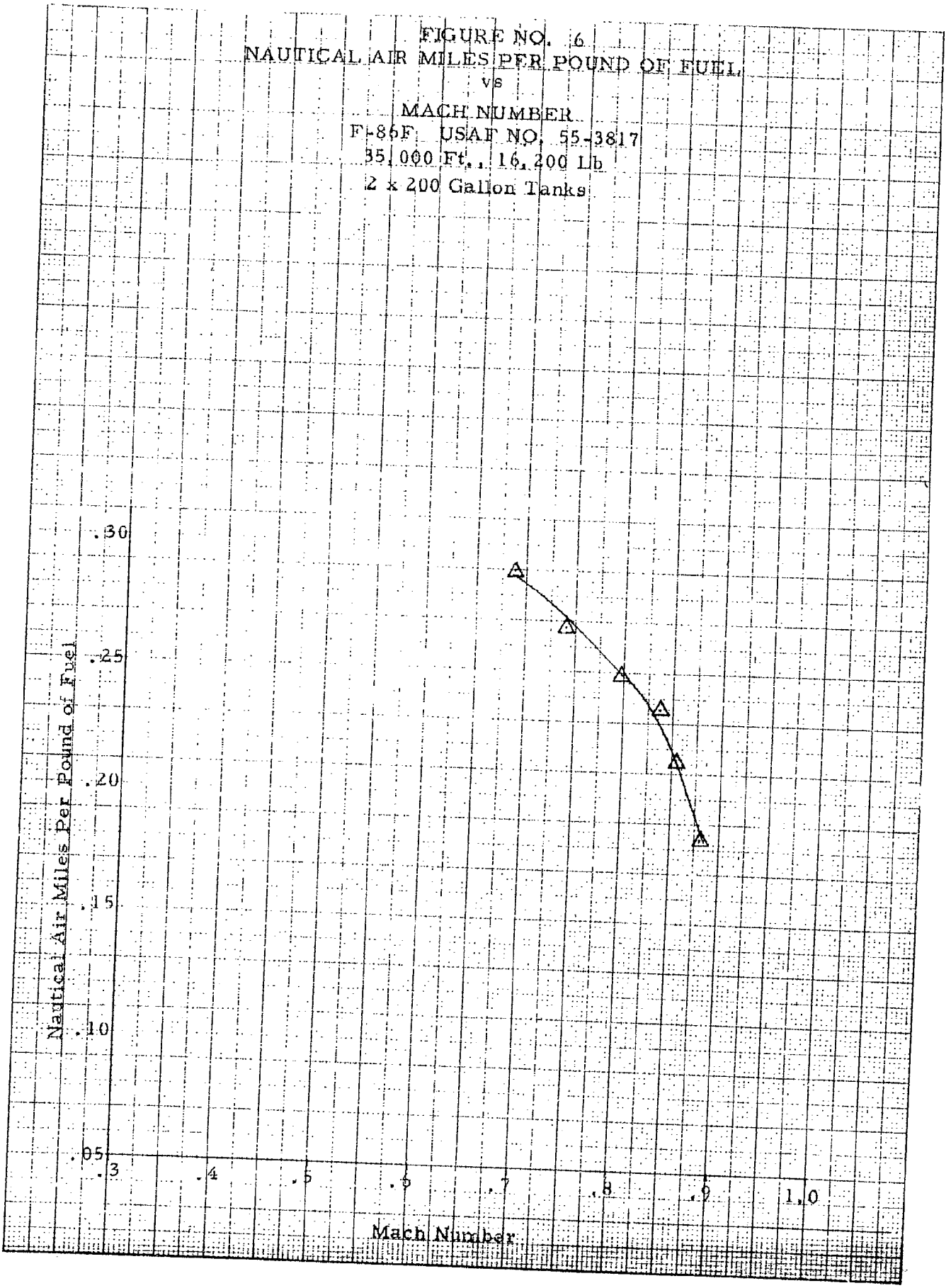


FIGURE NO. 7
COMPARISON OF
RPM vs CALIBRATED AIRSPEED
F-86F USAF NO. 55-3817
Modified, Unmodified, Flight Manual

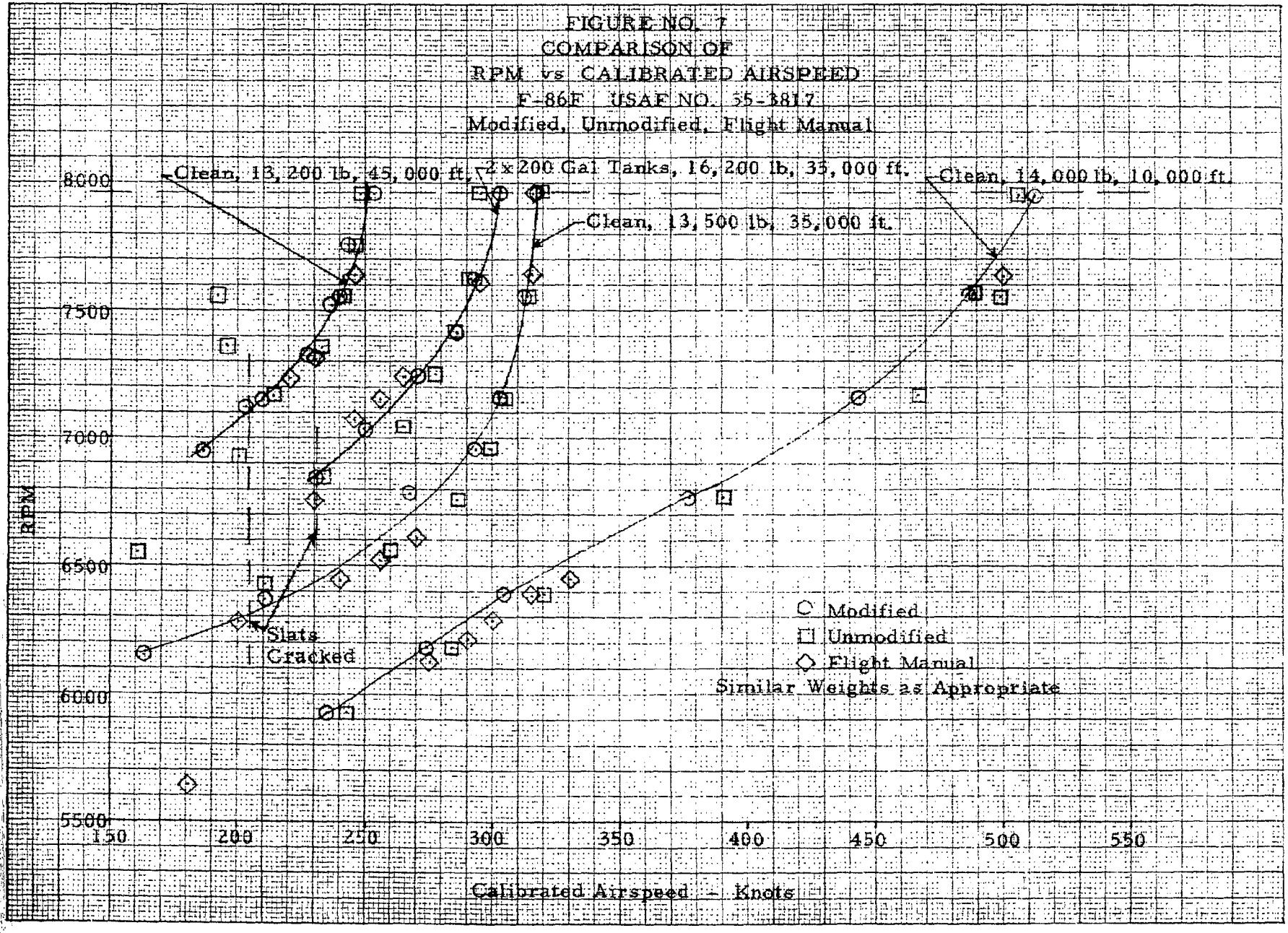


FIGURE NO. 8
TRUE AIRSPEED vs ALTITUDE
E-86F USAF NO. 55-3817
Clean Configuration

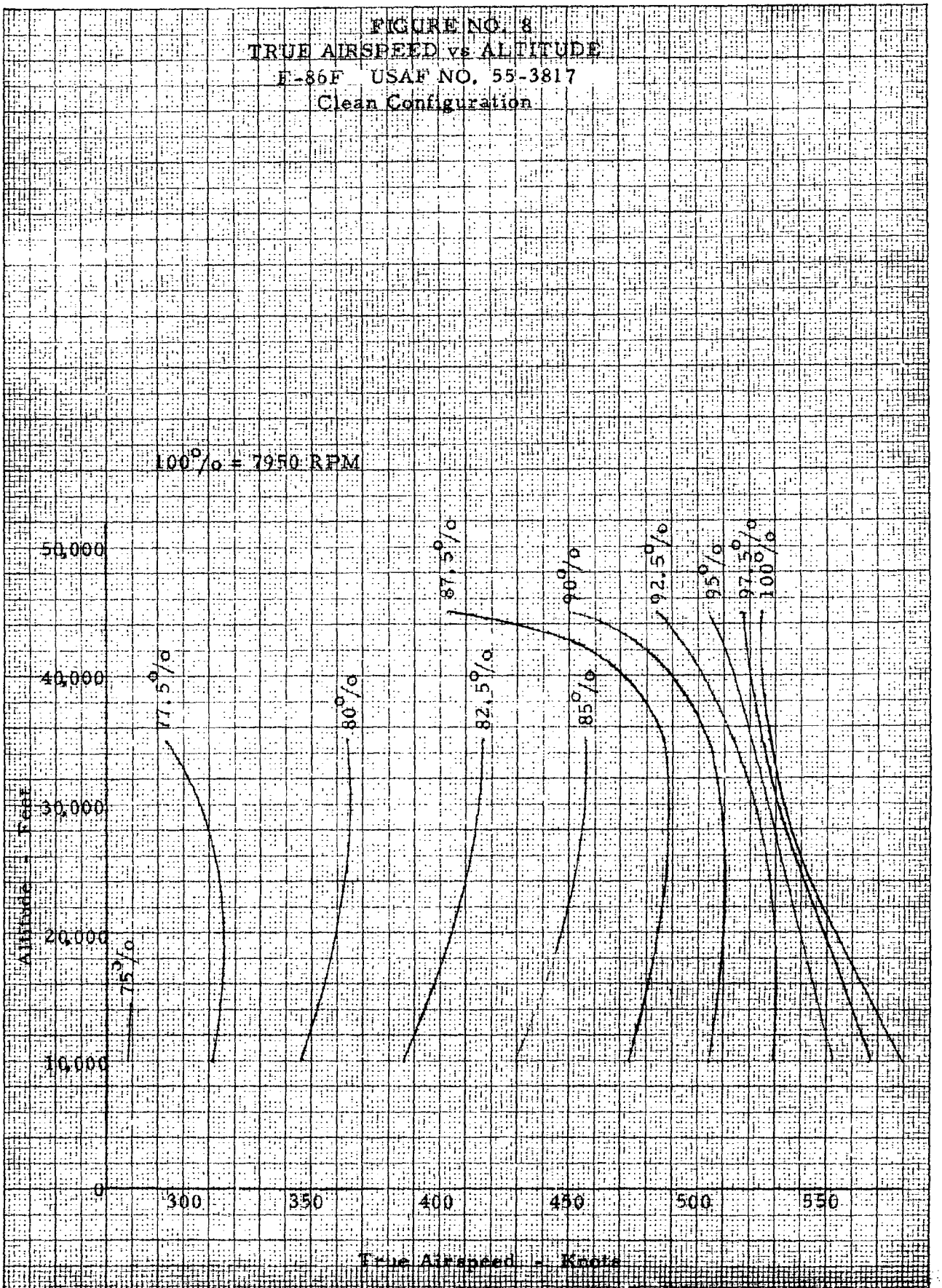


FIGURE NO. 9

$N/\sqrt{\theta_a}$ vs. MACH NUMBER

F-86F USAF NO. 55-3817

Clean Configuration

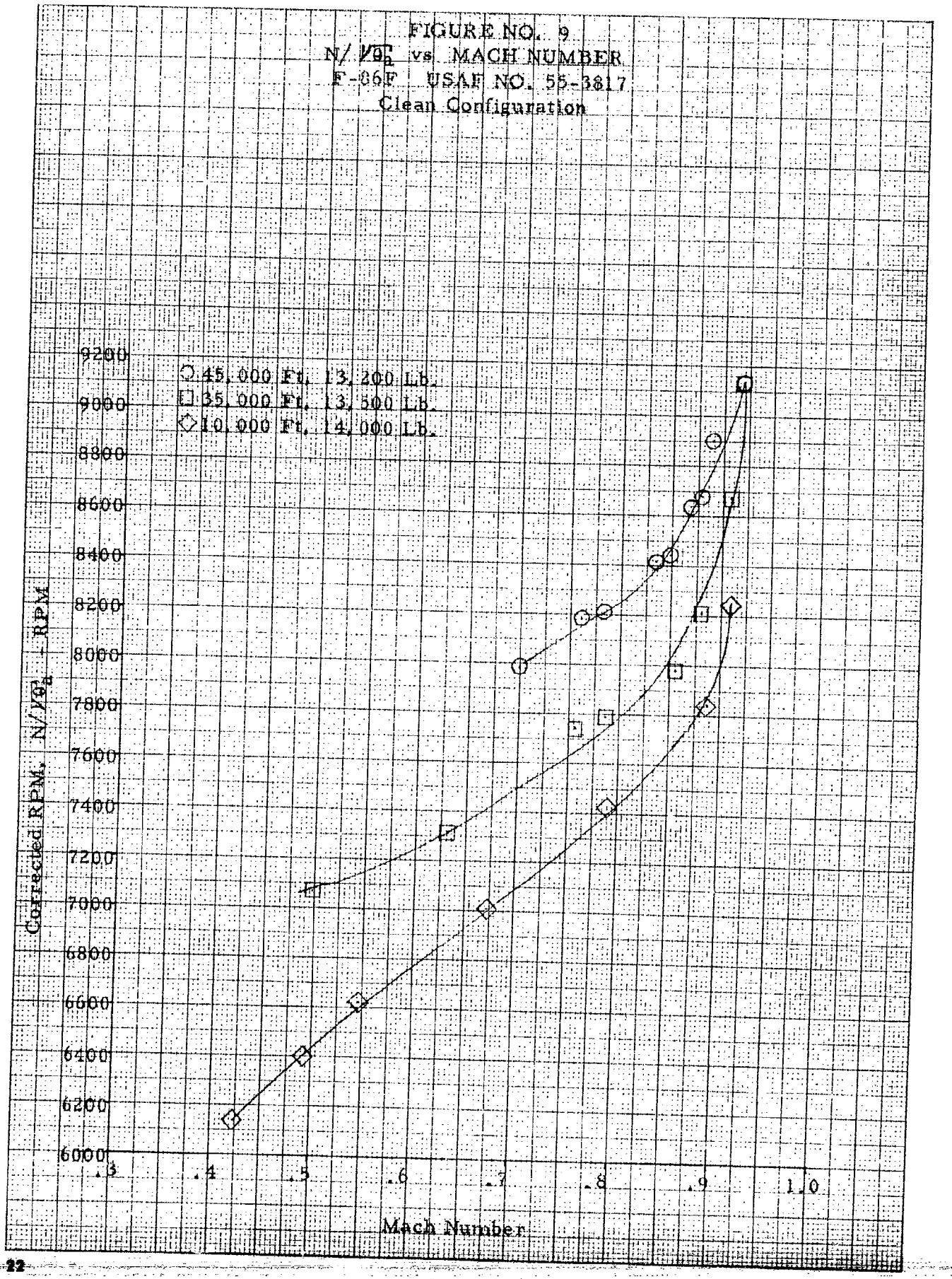


FIGURE NO. 10

$N/\sqrt{\theta_2}$ vs MACH NUMBER

T-38E USAF NO. 55-3817

35,000 Ft., 16,200 Lb.

2 x 200 Gallon Tanks

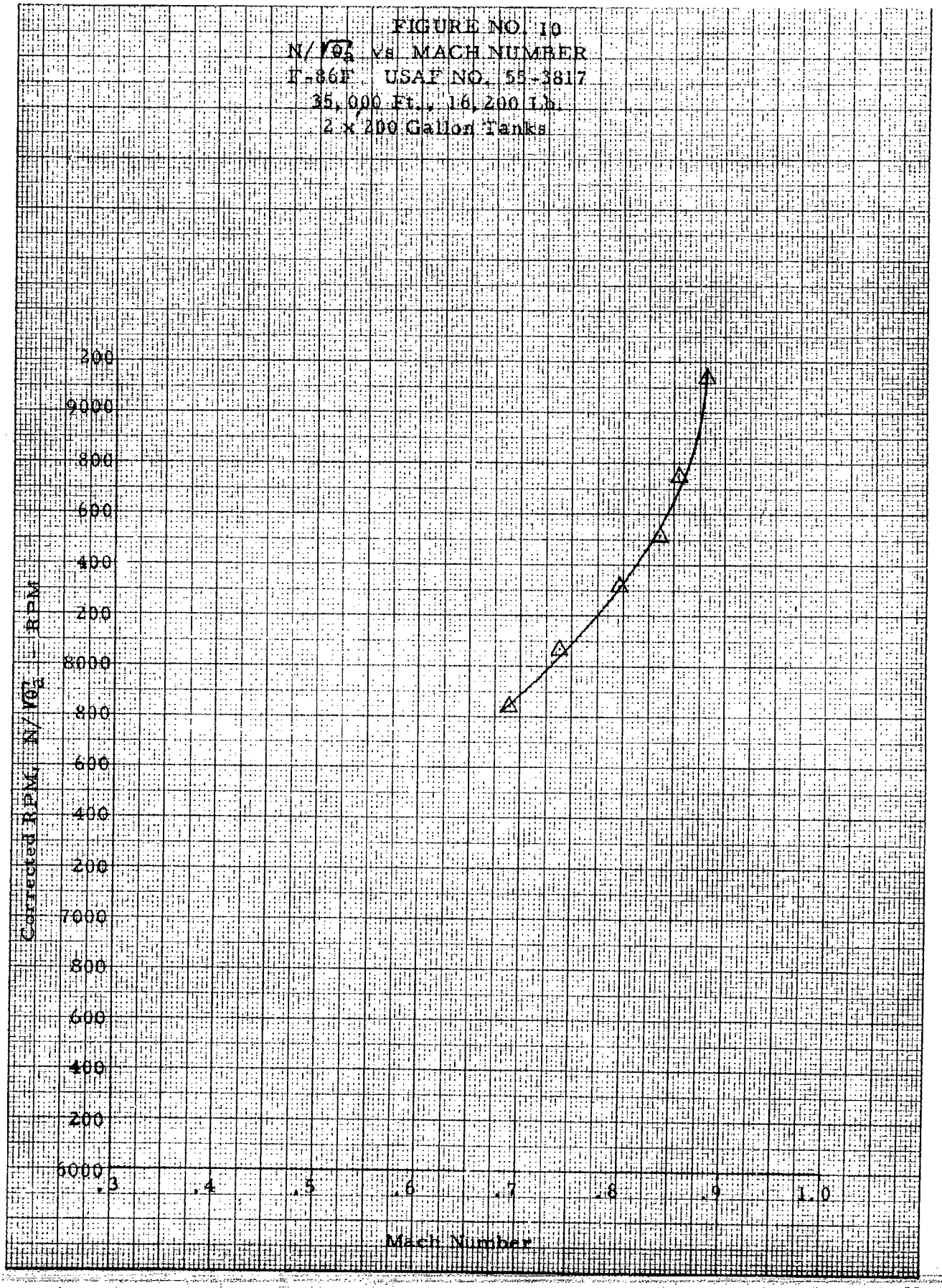


FIGURE NO. 11
STABILIZED LEVEL TURN CAPABILITIES
F-86F USAF NO. 55-3817
35,000 Ft. Military Power, 13,800 Lb.
Clean Configuration

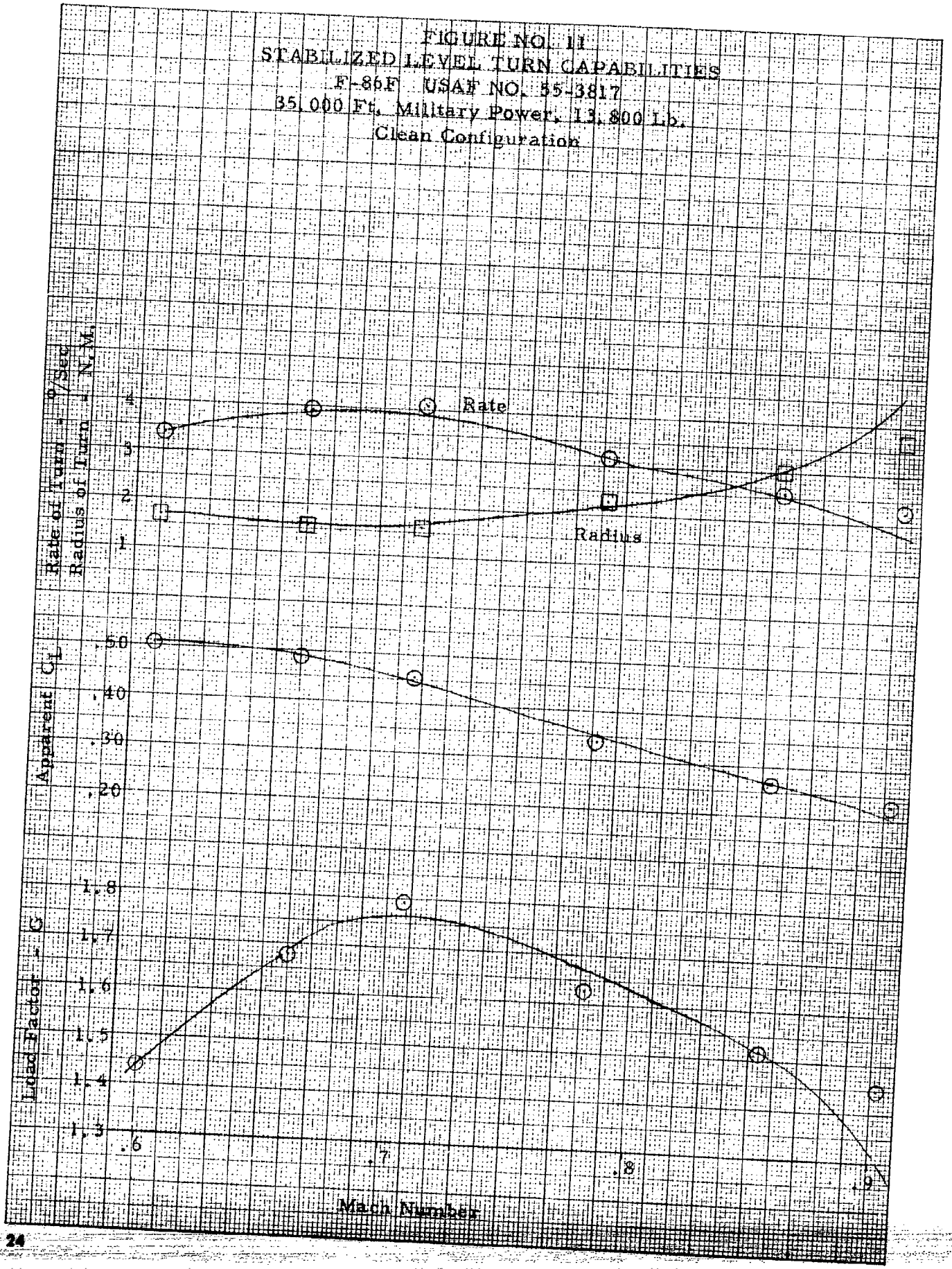


FIGURE NO. 12
STALL BOUNDARIES
F-86F USAF NO. 55-3817

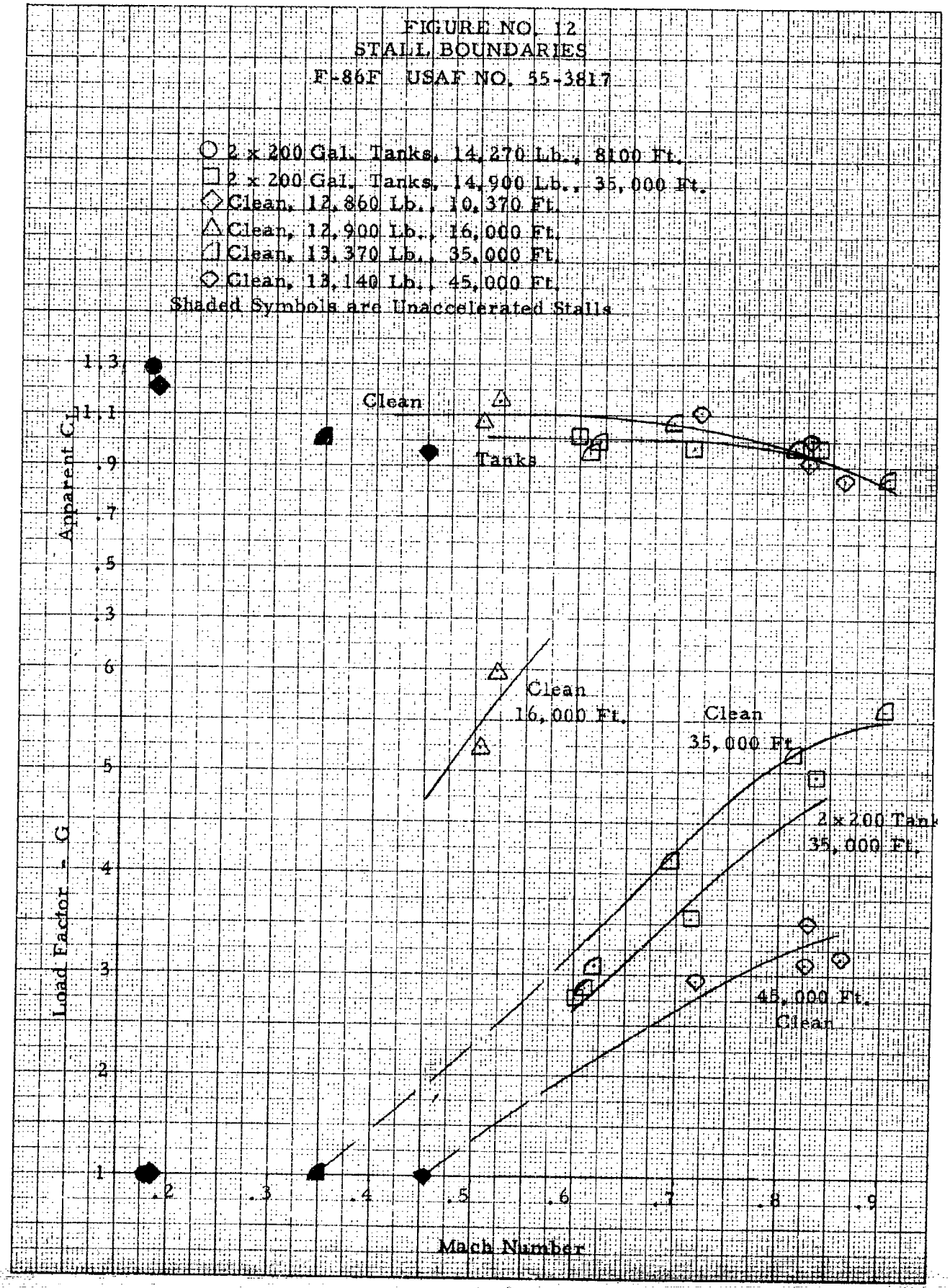


FIGURE NO. 13
BUFFET AND STALL BOUNDARIES
F-86F USAF NO. 55-3817
Clean Configuration
35,000 Ft., 13,370 Lb.

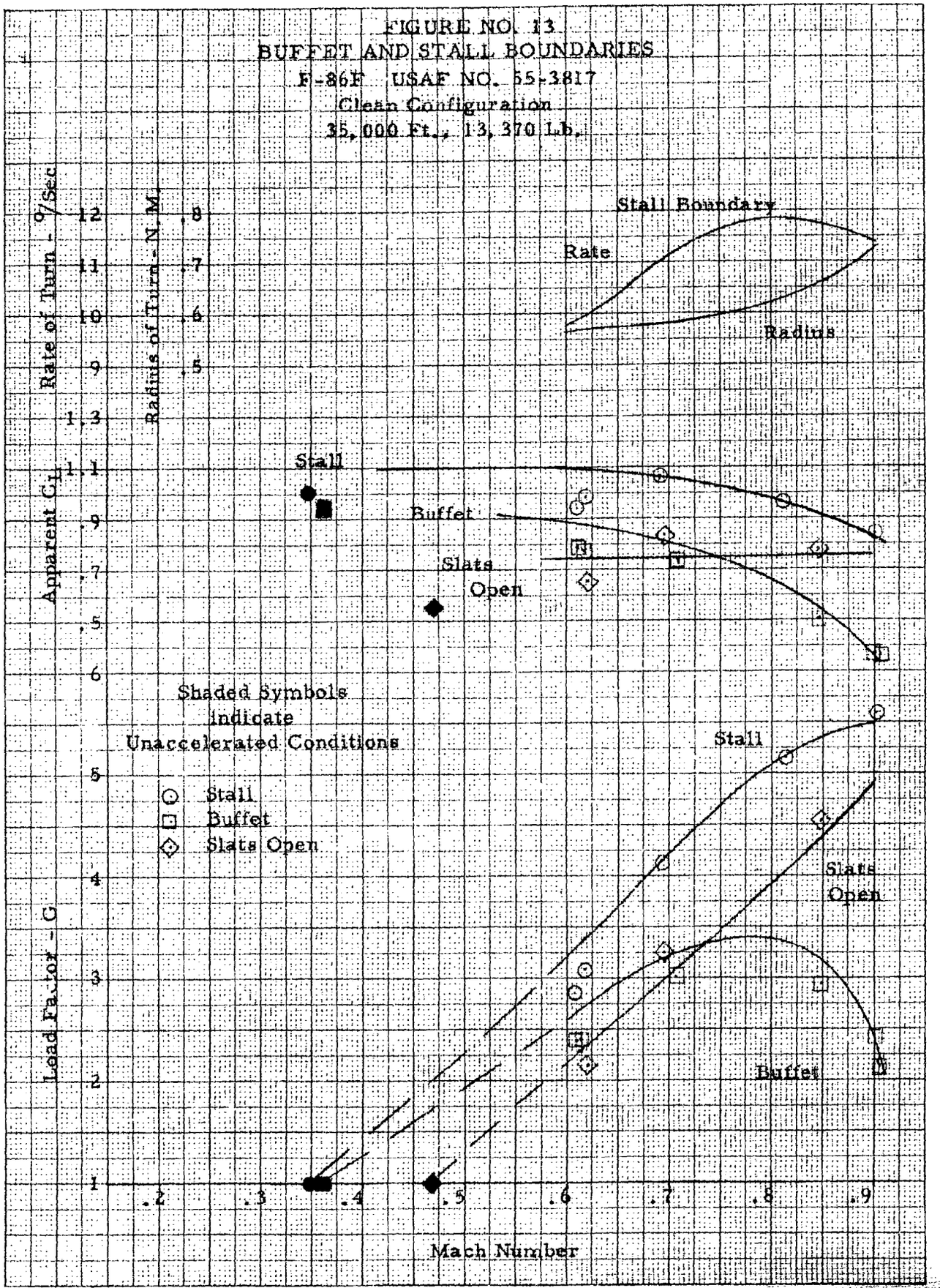


FIGURE NO. 14
BUFFET AND STALL BOUNDARIES
F-86F USAF NO. 55-3817
Clean Configuration
45,000 Ft., 13,140 Lb.

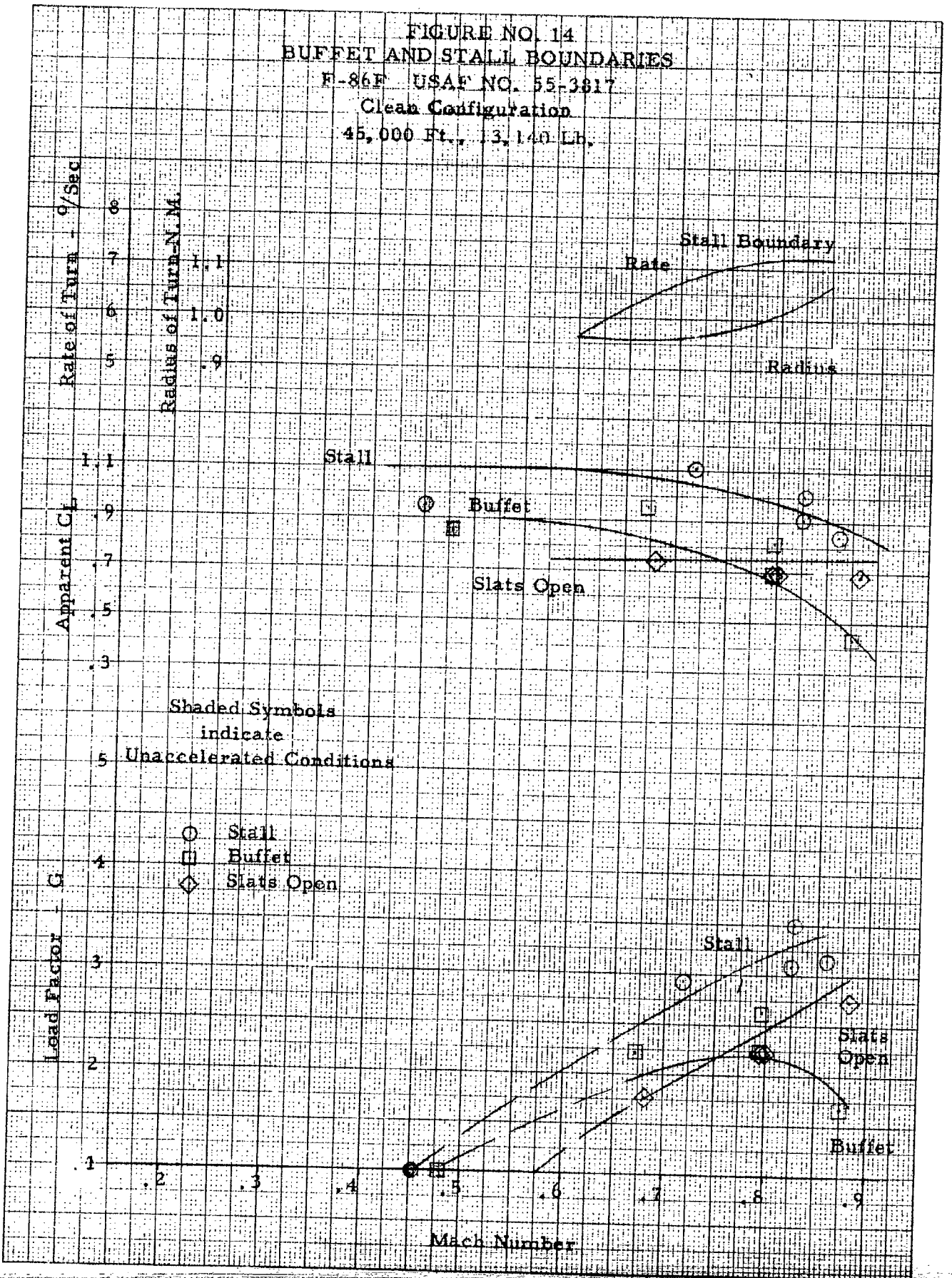


FIGURE NO. 15

BUFFET AND STALL BOUNDARIES

F-86F USAF NO. 55-3817

2 x 200 Gallon Tanks

35,000 Ft., 14,900 Lb.

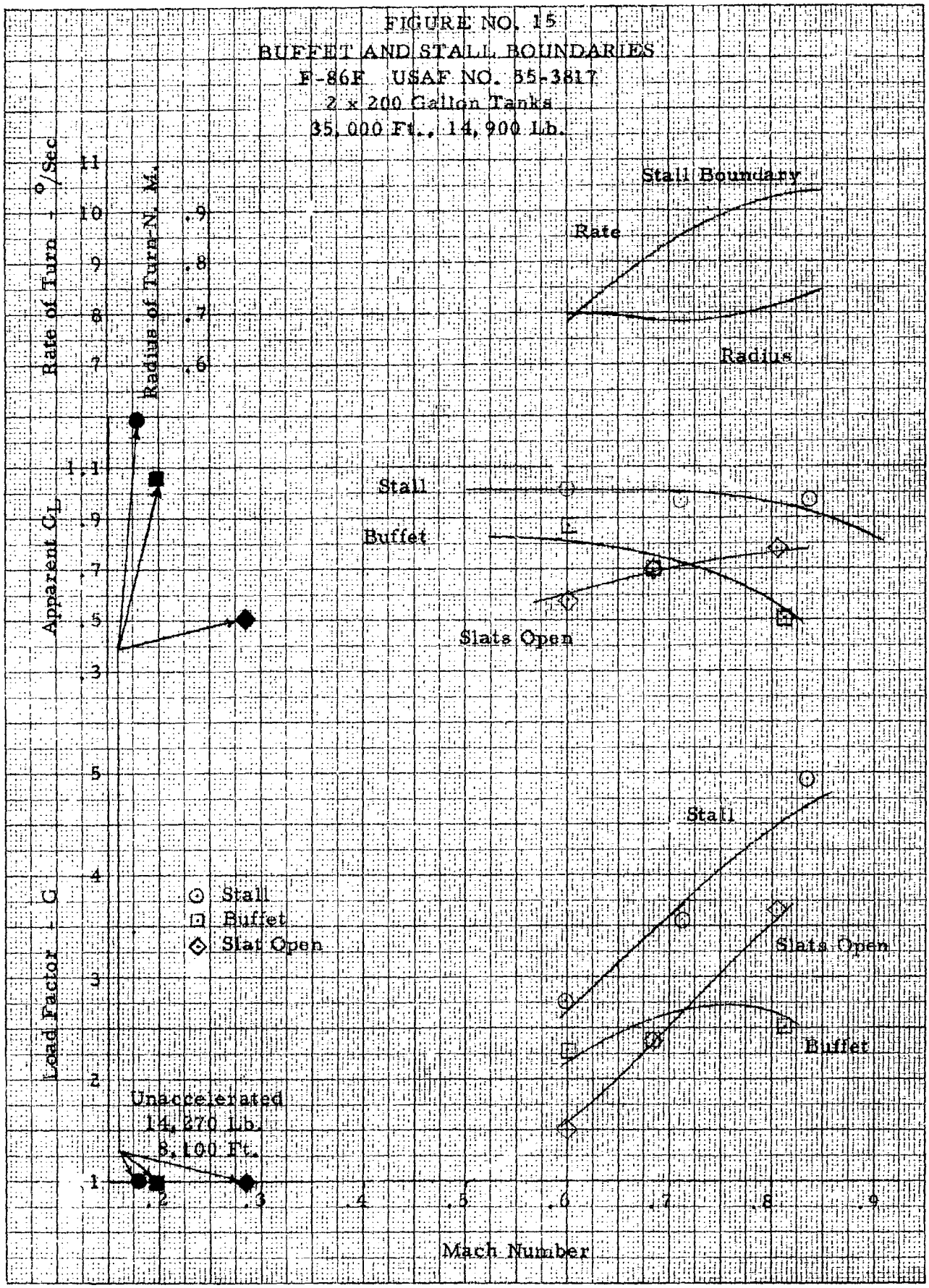


FIGURE NO. 16

LANDING PERFORMANCE

F-86F USAF NO. 55-3817

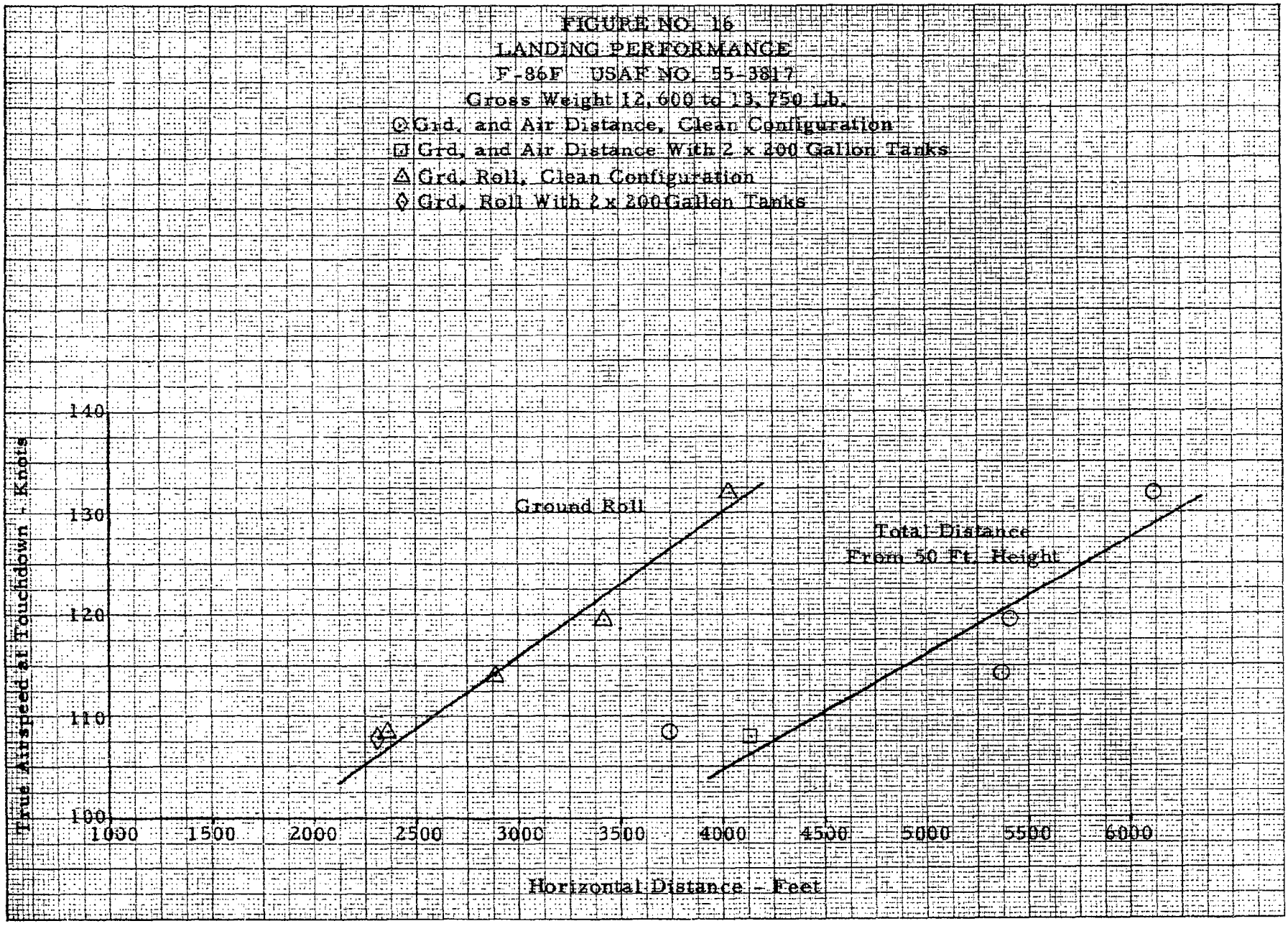
Gross Weight 12,600 to 13,750 Lb.

⊙ Grd. and Air Distance, Clean Configuration

⊡ Grd. and Air Distance With 2 x 200 Gallon Tanks

△ Grd. Roll, Clean Configuration

◊ Grd. Roll With 2 x 200 Gallon Tanks



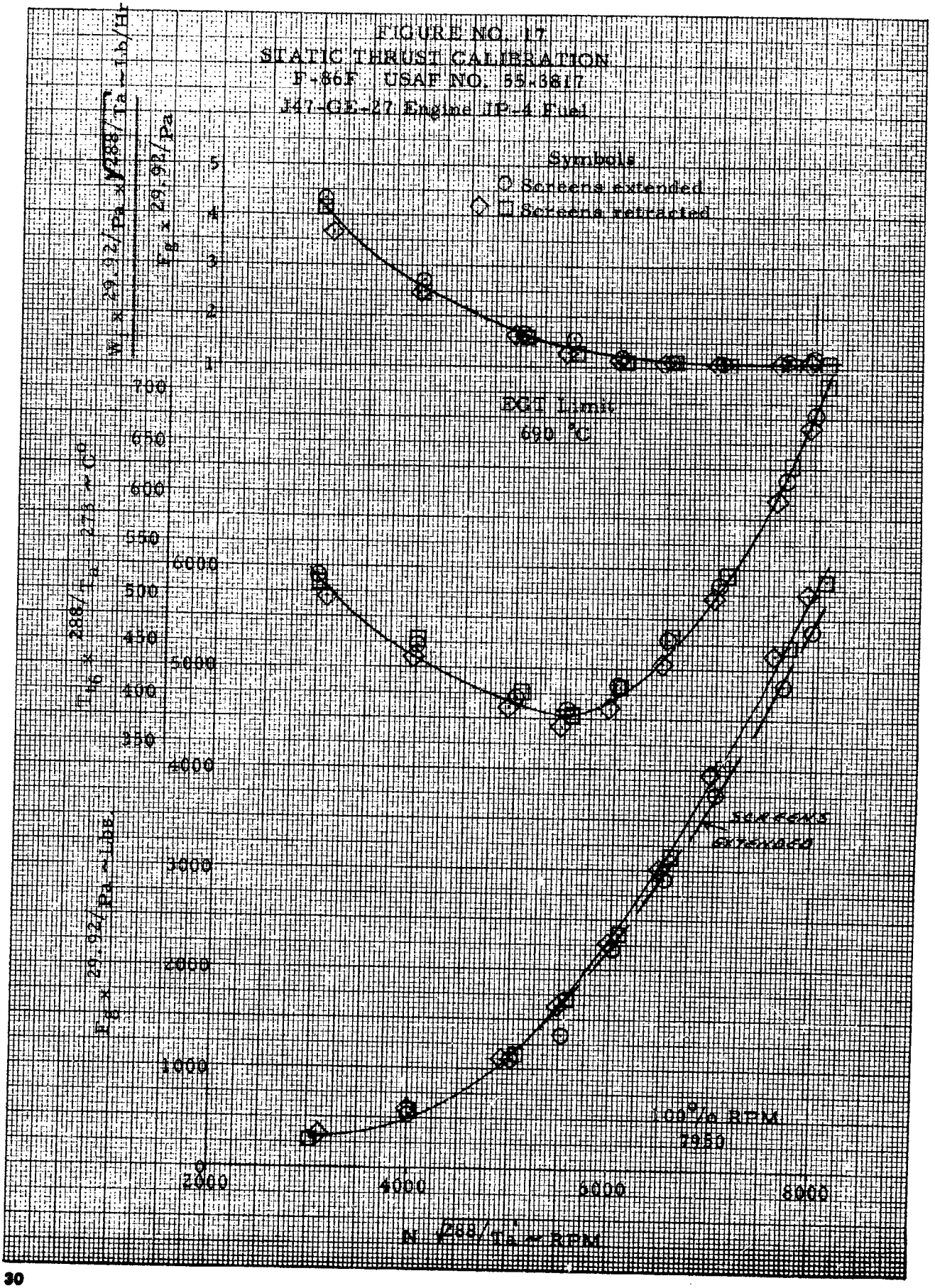


FIGURE NO. 17
STATIC THRUST CALIBRATION
F-86F USAF NO. 55-5817
J47-GE-27 Engine JP-4 Fuel
Symbols
○ Screens extended
◇ □ Screens retracted
EGT Limit
690 °C
100% RPM
7950
Screens extended
N √288/Ta – RPM
Fg x 29.92/Pa – Lbs
Wf x 29.92/Pa x √288/Ta – Lb/Hr
Fg x 29.92/Pa
288/Ta x 273 – °C
Fn+6 x

FIGURE NO. 18
FUEL CONSUMPTION
F-86F USAF NO. 55-3817
J47-GE-27 Engine, JP-4 Fuel

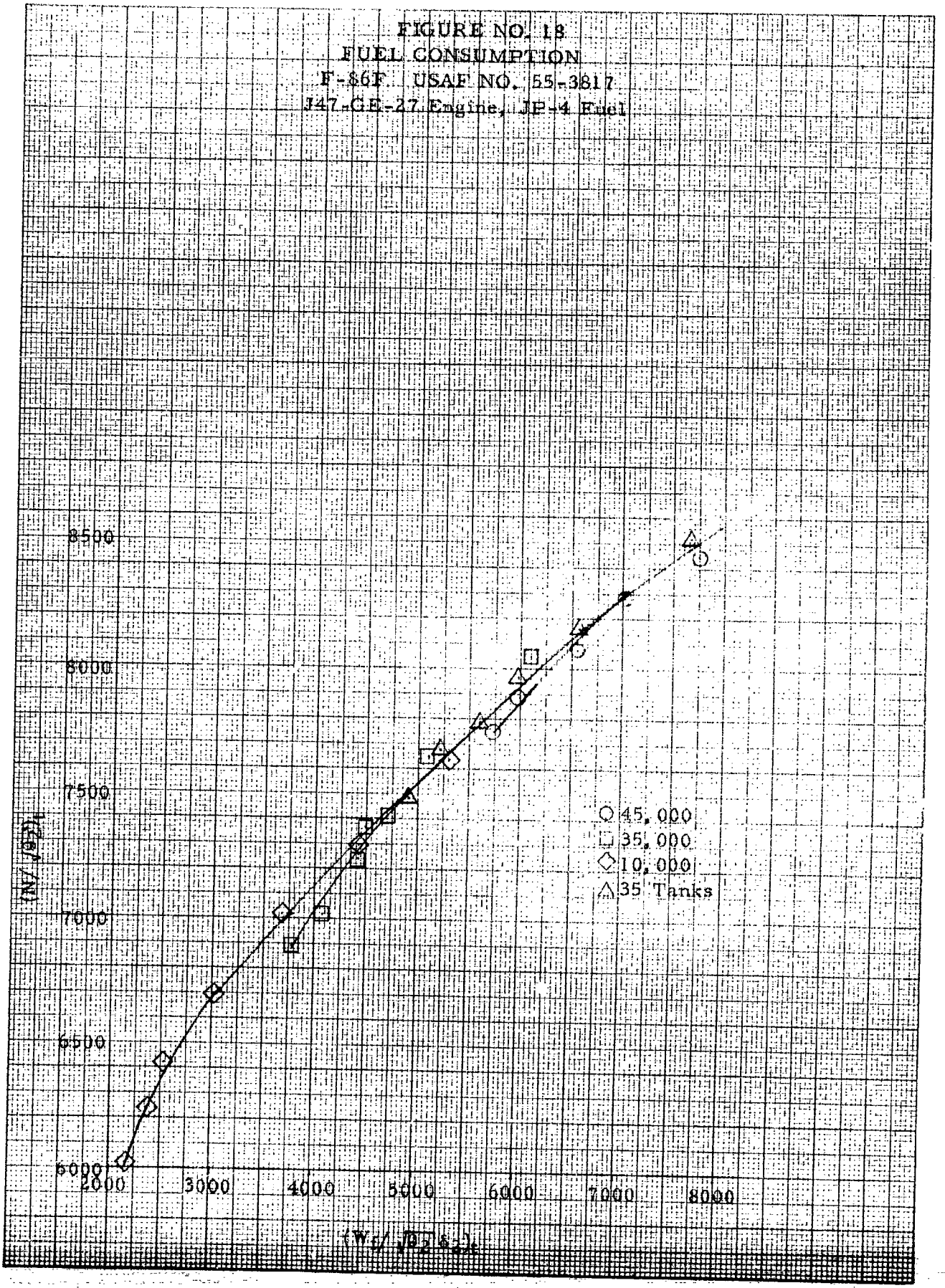
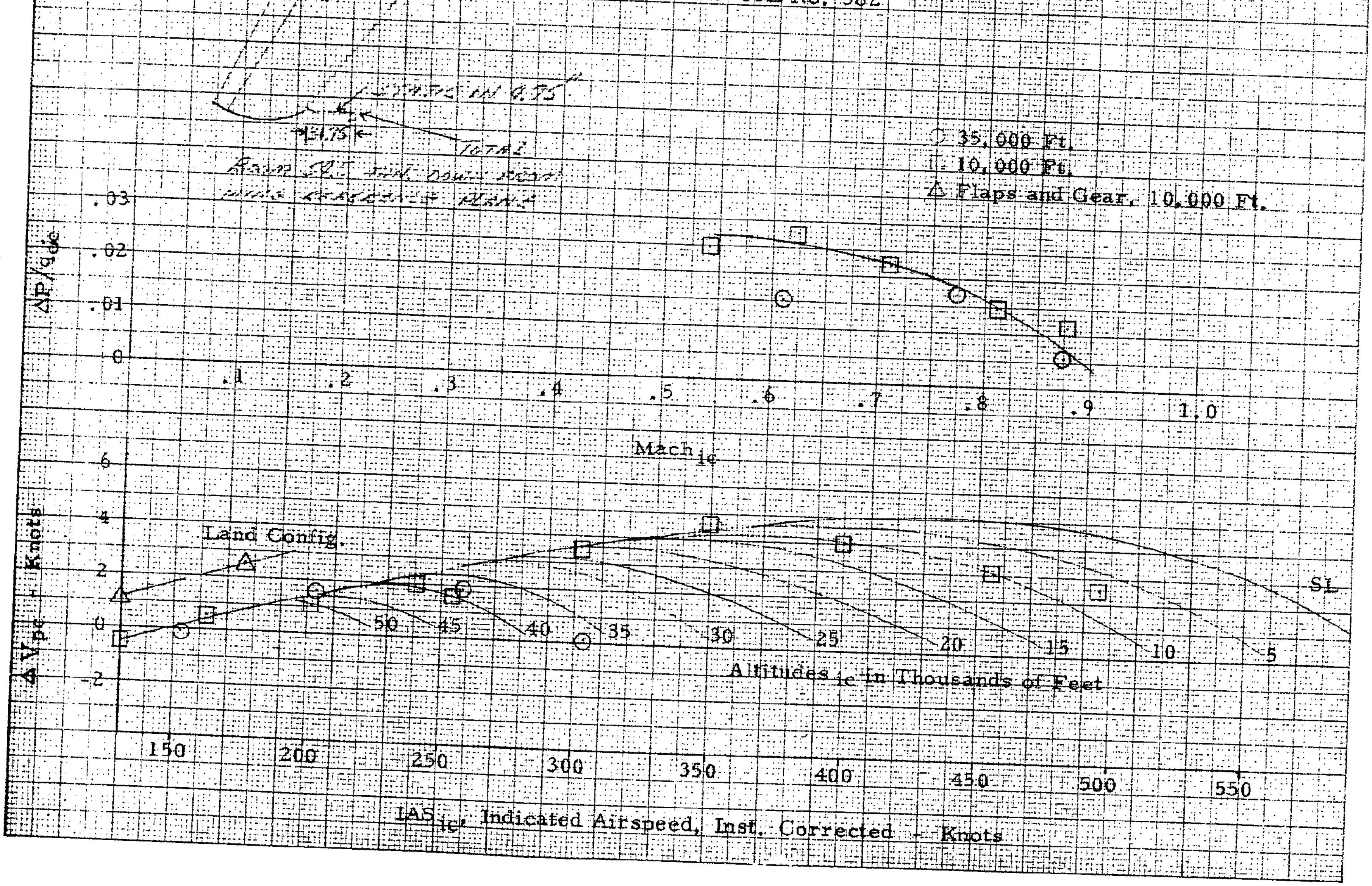


FIGURE NO. 19
AIRSPEED POSITION CORRECTION
F-86F USAF NO. 55-3817
Cross Pace With F-86E No. 582



appendix II

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■ aircraft dimensions

General Dimensions:	
Span	39.12 Ft
Length (Overall)	37.54 Ft
Height (Overall)	14.74 Ft
Wing:	
Area (Including Ailerons)	313.37 Sq Ft
Span	39.12 Ft
MAC	100.66 In
Aspect Ratio	4.883
Airfoil Section (Root) NACA 0012 (11.1)	64 Modified
Airfoil Section (Tip) NACA 0011 (9.7)	64 Modified
Taper Ratio	.510
Dehedral	3°

Sweepback (25% basic Airfoil)	35° 41'
Root Chord (Streamline)	130.16 In
Flaps	
Area (Total)	32.51 Sq Ft
Chord (Mean-Streamline)	29.62 In
Deflection	38°
Ailerons	
Area (Each)	16.36 Sq Ft
Deflection	±15°
Fuselage:	
Width (Maximum)	60.0 In
Height (Including Canopy)	78.25 In
Speed Brakes:	
Area (Total)	10.98 Sq Ft
Deflection	50°
Vertical Tail:	
Fin	
Area (Including Balance Area Ahead of Hinge Line)	25.32 Ft
Deflection	0°
Rudder	
Area (Including Tab but Excluding Balance Area Forward of Hinge Line)	8.12 Sq Ft
Deflection	±27.5°
Tab	
Area	.87 Sq Ft
Deflection	±15°
Horizontal Tail:	
Stabilizer	
Area	19.10 Sq Ft
Span	12.75 Ft
Root Chord	45.50 In
Deflection	Up 6°
	Down 10°
Dihedral	10°
Elevator	
Area (Aft of Hinge Line)	8.62 Sq Ft
Deflection (About the Hinge Line and Related to Horizontal Stabilizer)	
	Up 20.9°
	Down 3.3°

flight limitations

Maximum Take-Off Weight	20,200 Lbs
Maximum Landing Weight	20,200 Lbs
Limit Speeds:	
Clean	600 Kn
Two 200-Gallon Drop Tanks	500 Kn
Landing Configuration	185 Kn
Limit Maneuver Load Factors:	
Clean	+5.0 - 2.0 G
Two 200-Gallon Drop Tanks	+7.0 - 3.0 G

Power Limitations:	*RPM*	*TPT*
Military (30 Min)	7950	690°C
Normal Rated (Continuous)	7630	635°C

Maximum Allowable CG Positions:	
Clean	
Take-Off	17.5 - 26%
Landing	20 - 26%
Two 200-Gallon Tanks	
Take-Off and Landing	18.5 - 24.5%

power plant

J-47-GE-27

weight and balance

CONFIGURATIONS	CLEAN	TWO 200-GAL TANKS
Basic Weight	**11,501**	**11,501**
Ballast	**550**	**550**
Pilot	**230**	**230**
Oil	**26**	**26**
Fuel (Gal)	**(437)**	**(837)**
Fuel (At 6.5 Lb/Gal)	**2842**	**5442**
Two 200-Gal Tanks and Pylons	**—**	**600**
St. Wt.—Engine Start	**15,149**	**18,349**
CG — Percent MAC	**22.0**	

test instrumentation

The instrumentation was installed and maintained by the Instrumentation Branch, Technical Facilities Division, of the Air Force Flight Test Center.

All indicators were mounted in the pilot's panel or auxiliary panel without photo or oscillograph recording devices.

Production equipment and indicators were removed where necessary and the following calibrated items were installed: airspeed indicator, altimeter, free air temperature probe, temperature indicator, machmeter, accelerometer, tachometer, fuel flow meter, fuel counter, and automatic fuel flow timing unit.

appendix III

FLIGHT LOG
TEST DATA CORRECTED FOR INSTRUMENT ERROR

table of contents

flight log

FLT NO.	DATE	TIME	TESTS
.	13 Jan 56	.	Static Thrust Run (Screens IN)
.	18 Jan 56	.	Static Thrust Run (Screens Retracted)
1	19 Jan 56	1:00	Pacer diverted. Buffet and stall 35,000 Feet; Unaccelerated stall, 10,000 Ft
2	19 Jan 56	1:00	Airspeed calibration, buffet and stall, 35,000 Ft
3	20 Jan 56	:50	Airspeed calibration, 10,000 Ft
4	24 Jan 56	1:15	Check climb, buffet and stall, unaccelerated stall, 45,000 Ft
5	24 Jan 56	1:10	Check climb, buffet and stall, unaccelerated stall, 35,000 Ft
6	27 Jan 56	1:00	Stabilized level turns, 35,000 Ft
7	31 Jan 56	1:15	Check climb, level flight, 45,000 Ft
8	1 Feb 56	1:15	Check climb, level flight, 35,000 Ft
9	2 Feb 56	:40	Level flight, unaccelerated stalls, 10,000 Ft
10	3 Feb 56	1:00	Qualitative Evaluation, Major Childs
11	3 Feb 56	1:00	Buffet and stall, stabilized level turns, 35,000 Ft; buffet and stall, 10,000 Ft, 16,000 Ft
12	3 Feb 56	1:00	Qualitative Evaluation, General Holtoner
13	7 Feb 56	1:50	With two 200-gallon tanks; airspeed calibration, level flight, buffet and stall, 35,000 Ft; Unaccelerated stall, 10,000 Ft
.	9 Feb 56	.	Static Thrust Run (Screens Retracted)
14	15 Feb 56	1:05	Level flight, buffet and stall, 35,000 Ft; Simulated combat with unmodified F-86F
15	27 Feb 56	1:15	Level flight, buffet and stall, 45,000 Ft
	TOTAL	16:35	

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

THRUST CALIBRATION

Configuration		Screens Extended							
RPM	7900	7630	7000	6500	6000	5500	5000	4000	3000
EGT - °C	665	600	500	445	400	375	390	440	510
Δ Time/6 Gal. - Sec.	24.5	28.1	36.9	47.0	58.93	FLOW	METER	FAILED	
Ambient Pressure -"Hg	27.730	27.731	27.732	27.733	27.734	27.735	27.734	27.733	27.732
Temperature - °C	11.1	11.8	12.5	12.5	12.5	12.7	12.9	13.1	13.3
Measured Thrust - Lb.	4980	4470	3460	2675	1995	1205	975	480	240
Fuel Weight #/Gal.	6.4	→	→	→	→	→	→	→	→

Configuration		Screens Retracted							
RPM	7950	7630	7000	6500	6000	5500	5000	4000	3000
EGT - °C	680	600	495	435	385	360	380	430	485
Δ Time/5.9 Gal - Sec.	23.30	27.42	36.40	46.17	58.73	72.40	5/71.0	7/125	5/113
Ambient Pressure -"Hg	27.770	→	→	→	→	→	→	→	→
Temperature - °C	7.0	7.1	7.3	7.5	7.7	7.9	8.2	8.8	9.4
Measured Thrust - Lb	5460	4845	3740	2890	2155	1550	1065	535	250
Fuel Weight #/Gal.									

Configuration		Screens Retracted							
RPM	7950	7630	7000	6500	6000	5500	5000	4000	3120
EGT - °C	675	600	500	435	390	375	390	440	500
Δ Time/6 Gal. - Sec.	24.25	28.30	37.65	48.25	61.15	74.55	86.20	108.15	132.52
Ambient Pressure -"Hg	27.870	→	→	→	→	→	→	→	→
Temperature - °C	18.0	18.0	17.8	17.7	18.0	17.9	18.0	18.0	17.9
Measured Thrust - Lb.	5320	4750	3650	2785	2070	1495	1010	530	290
Fuel Weight #/Gal.	6.5	→	→	→	→	→	→	→	→

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

AIRSPEED CALIBRATION

Clean Configuration

Flight No.	2	→	→	→	3	→	→	→
IAS - Knots	303.5	258.	203	153	495.5	456	399.5	350
Altitude - Feet	34940	35750	35240	34550	9930	9850	→	→
Ind. Air Temp. - °C	-21	-31	-40	-45	+44	+38	+31	+24
Gear and Flaps	UP	→	→	→	→	→	→	→
CAS Pacer - Knots	303.5	260.0	204.5	153.0	498	459	403.5	354.5
Flight No.	3	→	→	→	→	→	→	
IAS - Knots	302	254	201.5	162.	130.5	176	129.5	
Altitude - Feet	9850	→	9790	9850	9850	10105	9890	
Ind. Air Temp. - °C	+18	+14	+11	+8	+6	+8	+6	
Gear and Flaps	UP	→	→	→	→	DOWN	→	
CAS Pacer - Knots	305.5	255.5	202.5	162.5	130	178.5	130.5	

TAKE-OFFS

Configuration	CLEAN	→	→	→	→	→	200 TANKS	CLEAN
Flight No.	1	4	5	7	8	9	13	15
Fuel Count - Gal. #	35	30	2680#	45	50	31	35	25
IAS TO - Knots	122	118	113.5	115.5	115.5	112.5	123.5	121
IAS 50' - Knots	145	140	138	129.5	132	132	140	138
RPM	7500	7950	→	→	→	→	→	→
Grd. Dist. - Feet	3691	2450	2396	1845	2250	2425	4522	2700
Air Dist. - Feet	2280	1790	1319	1950	980	1170	2190	2000
Rel. Wind Dir. - Deg.*	50 RT	50 LH	35 RH	30 RT	30 RH	50 LH	T	60 LH
Wind Vel. Ft/Min.	432	355	256	138	10 KN	438	12 KN	144
Pressure - "Hg	27.695	27.675	27.590	27.590	27.825	28.015	27.630	27.800
Temperature - °C	8.5	9.3	17	11	5.8	8	17.7	6
Rel. Humidity - %	21	39	42	63	38	39	22	78

# Indicates fuel reading in pounds remaining - Ship's system

* RT - Right tail, LH - Left Head etc.

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

CHECK CLIMBS
Clean Configuration

Flight No.	4	—	—	—	—	—	—	→
Time - Min.	0	0.34		1.84	3.09	4.50	5.75	6.17
IAS - Knots	475.5	463	435	401	359	340	309	305
Altitude - Feet	3000	5000	10050	15150	20200	25250	30250	31250
FAT - °C		+39	+39	+20	+19	+1	-11	-13
RPM	7950	—	—	—	—	—	—	→
EGT - °C		675	660	650	650	650	650	650
Fuel Count - Gal.		83	97	108	120	135	144	147

Flight No.	4	—	—	—	—	—	—	→
Time - Min.	6.92	7.25	7.70	8.12		9.10	9.67	10.45
IAS - Knots	298.5	294	285	280.5	273	266	249	246
Altitude - Feet	33250	34200	35200	36150	37100	38100	40100	41100
FAT - °C	-20	-22	-25	-25	-28	-30	-35	-44
RPM	7950	—	—	—	—	—	—	→
EGT - °C	650	—	—	—	→	650	660	670
Fuel Count - Gal.	147	155	158	160	161	163	169	173

Flight No.	4	—	—	—	—	—	—	→
Time - Min.	11.17	12.17	13.50	14.92	15.42	16.67		
IAS - Knots	238	232	227.5	222.5	215.5	209	200	200
Altitude - Feet	42050	43100	44100	45100	46100	47100	48100	48600
FAT - °C	-42	-41	-31	-29	-29	-27	-29	
RPM	7950	—	—	—	→	7950	7850	7850
EGT - °C	670	675	680	680	680	690	675	680
Fuel Count - Gal.	177	182	188	194	196	201	209	211

Flight No.	5	—	—	—	—	—	—	→
Time - Min.	0	1.00		3.05	4.72	6.23	6.50	6.75
IAS - Knots	473	440	391	369.5	340	315	305	296
Altitude - Feet	3500	10050	15150	20200	25250	30250	31250	32250
FAT - °C		+33	+22	+14	+2	-9	-11	-15
RPM	7950	—	—	—	—	→	7950	7950
EGT - °C	675	650	—	—	—	—	→	650
Fuel Count - Gal.		2150	2075	2000	1900	1820	1800	1800

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

CHECK CLIMBS
Clean Configuration

Flight No.	5	→	→	→	→	→	→	→
Time - Min.	7.13	7.45	7.77	8.08	8.62	9.18	9.78	10.20
IAS - Knots	291	287	283	276	267	261	257	252
Altitude - Feet	33250	34200	35200	36150	37100	38100	39100	40100
FAT - °C	-19	-22	-25	-27	-30	-33	-33	-33
RPM	7950	→	→	→	→	→	→	→
EGT - °C	650	→	→	→	→	→	→	→
Fuel Count - Gal.	1800	1780	1770	1750	1740	1700	1690	1680

Flight No.	5	→	→	→	→	→	→	7
Time - Min.	10.77	11.48	12.25	12.92	13.57	14.65	15.68	0
IAS - Knots	295	239	230.5	226.5	219.5	215.5	208	47.3
Altitude - Feet	41100	42050	43100	44100	45100	46100	47100	3500
FAT - °C	-32	-32	-33	-33	-33	-34	-35	+41
RPM	7950	→	→	→	→	→	7950	7950
EGT - °C	650	665	670	675	675	675	680	675
Fuel Count - Gal.	1650	1625	1600	1600	1580	1550	1520	87

Flight No.	7	→	→	→	→	→	→	→
Time - Min.	.94		2.70		4.9	5.18		5.79
IAS - Knots	437	404	372.5	339	308	300.5	296	291
Altitude - Feet	10050	15150	20200	25275	30250	31250	32250	33225
FAT - °C	+31	+18	+8	-4	-17	-19	-21	-22
RPM	7950	→	→	→	→	→	→	→
EGT - °C	670	675	→	→	665	660	→	→
Fuel Count - Gal.	100	115	127	136	147	149	151	154

Flight No.	7	→	→	→	→	→	→	→
Time - Min.	6.26	6.595	6.985	7.325	7.91	8.39	8.94	9.575
IAS - Knots	286	280	274	266	259	257	251	243
Altitude - Feet	34225	35200	36150	37125	38100	39100	40075	41075
FAT - °C	-23	-23	-21	-21	-21	-21	-22	-21
RPM	7950	→	→	→	→	→	→	→
EGT - °C	660	→	→	670	→	→	→	675
Fuel Count - Gal.	157	159	162	164	167	170	172	176

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

CHECK CLIMBS
Clean Configuration

Flight No.	7	→	→	→	8	→	→	→
Time - Min.	10.38	11.16	12.11	13.345	0	.895		2.87
IAS - Knots	239	232	226.5	219.5	473	430	404	369.5
Altitude - Feet	42075	43075	44075	45075	3500	10050	15150	20200
FAT - °C	-21	-21	-22	-24	+31	+26	+17	+7
RPM	7950	→	→	→	7950	→	→	→
EGT - °C	675	675	680	680	680	680	670	675
Fuel Count - Gal.	180	183	188	193	90	106	120	132

Flight No.	8							
Time - Min.		5.16	5.5	6.05	6.56	6.84	7.08	
IAS - Knots	338	307	302.5	296	294	289	279	
Altitude - Feet	25275	30250	31250	32250	33225	34225	35200	
FAT - °C	-8	-13	-15	-15	-16	-17	-17	
RPM	7950	→	→	→	→	→	→	
EGT - °C	670	660	→	→	→	→	→	
Fuel Count - Gal.	144	154	156	160	163	165	167	

Flight No.								
Time - Min.								
IAS - Knots								
Altitude - Feet								
FAT - °C								
RPM								
EGT - °C								
Fuel Count - Gal.								

Flight No.								
Time - Min.								
IAS - Knots								
Altitude - Feet								
FAT - °C								
RPM								
EGT - °C								
Fuel Count - Gal.								

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

SPEED POWER

Clean Configuration

Flight No.	7	→	→	→	→	→	8	→
RPM	7950	7750	7350	7550	7150	6950	7950	7550
Altitude - Feet	44945	44475	44675	44825	45035	45275	34375	34850
IAS - Knots	253	245	231	240	208	183.5	319.5	312
FAT - °C	-17	-20	-21	-21	-26	-34	-15	-20
Δ Time/6 Gal. - Sec.	77.5	86.9	107.2	116.1	121.5	126.4	43.6	61.6
Fuel Count - Gal.	251	255	271	292	316	336	211	237
Slats	CLOSED	→	→	→	→	1/4 OPEN	CLOSED	→

Flight No.	8	→	→	→	9	→	→	→
RPM	7150	6950	6750	6150	7950	7550	7150	6750
Altitude - Feet	35300	35425	35625	35725	9650	10050	10600	10875
IAS - Knots	298.5	289	251	160	513	481	434	364
FAT - °C	-21	-20	-23	-43	+39	+35	+26	+20
Δ Time/6 Gal. - Sec.	78.0	86.2	103.8	156.6	21.8	28.0	37.8	51.9
Fuel Count - Gal.	276	294	322	346	152	200	234	269
Slats	CLOSED	→	→	1/3 OPEN	CLOSED	→	→	→

Flight No.	9	→	→	14	→	15	→	→
RPM	6360	6150	5900	6750	6750	7350	7550	7150
Altitude - Feet	11295	11575	11575	34175	34025	44015	43905	44125
IAS - Knots	292	262	224.5	212	270	230	241	205
FAT - °C	+10	+6	+3	-39	-31	-22	-21	-28
Δ Time/6 Gal. - Sec.	70.6	79.0	91.6	125.0	94.7	106.5	92.9	122.05
Fuel Count - Gal.	300	315	338	185	155	206.5	190	233.5
Slats	CLOSED	→	→	→	→	→	→	→

2 x 200 Gal. Tanks

Flight No.	13	→	→	→	→	→		
RPM	7900	7550	7350	7150	6950	6750		
Altitude - Feet	34005	34225	34280	34450	35375	35575		
IAS - Knots	308	297.5	289	272	245	226.5		
FAT - °C	-25	-26	-28	-30	-36	-39		
Δ Time/6 Gal. - Sec.	49.8	59.8	67.4	75.9	90.7	102.9		
Fuel Count - Gal.	209	240	260	280	390	430		
Slats	CLOSED	→	→	→	→	OPEN 1"		

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

STABILIZED TURN CAPABILITIES

Clean Configuration

Flight	6	→	→	→	6	11	
IAS - Knots	308	289	261	233	196	217.5	
Altitude - Feet	35400	35,200	35,200	35200	35,200	35,200	
FAT - °C	-27	-31	-33	-39	-45	-39	
Observed G - G	1.4	2.2	2.3	1.9	1.7	1.8	
Fuel Count - Gal.	182	210	260	310	344	280	
Δ Time/360° - Sec.	176.4	148	113.2	86	85.2	90.7	

STALLS

Flight No.	4	→	→	→	5	→	→	→	9
Configuration	CLEAN	→	→	→	→	→	→	→	→
Event*	CR	OP	Bu	ST	CR	OP	Bu	ST	CR
IAS - Knots	203		122	115.5	203	150	115.5	111.5	203
Altitude - Feet	44080		46490	46490	36150		36825		9550
Fuel Count - Gal.#	325		400#	400#	425#	→	400#	→	355

STALLS

Flight No.	9	→	→	→	→	13	→	→	→
Configuration	CLEAN	→	→	→	LAND →	2 X 200 GAL.	→	→	→
Event*	OP	Bu	ST	Bu	ST	CR	OP	Bu	ST
IAS - Knots	150	105.5	101.5	98	89	228.5	163	112.5	103.5
Altitude - Feet		10250	10375	9750	9850	8000	8000	8075	8075
Fuel Count - Gal.#	355	→	→	359	→	627	→	→	→

*CR - Slats cracked, OP - Slats full open, Bu - Buffet, St. - Stall

#Fuel readings in pounds remaining - Ship's system.

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

LANDINGS

Configuration	CLEAN	→	→	→	200 TANKS	CLEAN
Flight No.	4	5	7	9	13	15
Fuel Count - Gal.##	350	300##	350##	392	705	300##
IAS 50' - Knots	119	129.5	122	129.5	127.5	145
IAS TO. - Knots	110	115.5	111	116.5	112.5	127.5
Braking	NORM	MAX.	MAX	NORM	MOD	NORM.
Air Distance - Feet	1980	1560	2570	1350	1670	2095
Ground Distance - Feet	3640		3316	2362	2113	4270
Relative Wind Dir. - Deg.	20LH	60LH	40RT	30LH	OHWI	85RT
Wind Velocity - Ft/Min.	103	303	535	303	940	460
Pressure - "Hg	27.675	27.585	27.570	28.015	27.620	27.810
Temperature - °C	13.1	17.0	9.5	8.5	16.5	8.0

Indicates fuel reading in pounds remaining - Ship's system

*LH - Left Head, RT - Right Tail etc.

BUFFET AND STALL BOUNDARIES

Clean Configuration, Military Power

EVENT	Flight	IAS-Knots	Alt. -Feet	G	Fuel # Count-Gal	AIM Mach
Slats Open	1	200.0	36500	2.0		0.6
Buffet		197.0	36000	2.2		0.6
Stall		212.0	33250	3.2	1972	0.6
Slats Open	1					0.6
Buffet		194.0	36900	2.2		0.6
Stall		198.0	35500	2.8	940#	0.6
Slats Open	4	241.0	45000	2.7		0.88
Buffet		226.5	47000	1.5		0.88
Stall		247.0	42300	3.5	274	0.88
Slats Open	4	209.0	45500	2.2		0.8
Buffet		209.0	45600	2.2		0.8
Stall		220.5	45100	3.1	600#	0.8

Fuel reading in pounds remaining - Ship's system.

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

BUFFET AND STALL BOUNDARIES

Military

EVENT	Flight	IAS-Knots	Alt.-Feet	G	Fuel # Count-Gal	Aim Mach
Slats Open	5			3.2		0.9
Buffet		300.5	36500	2.0		0.9
Stall	NOT FULL	303.0	35750	4.7	1000#	0.9
Slats Open	5	225.5	36000	3.2		0.7
Buffet		229.0	36150	2.9		0.7
Stall		229.0	35000	4.2	700#	0.7
Slats Open	11	269.0	37125	4.0		0.8
Buffet		269.0	37125	2.6	239	0.8
Stall		278.0	34225	5.2		0.8
Slats Open	11					
Buffet		294.0	37125	2.1		0.9
Stall		321.5	33225	5.8	185	0.9
Slats Open	11			5.2		0.6
Buffet		320.0	12300	4.4	319	0.6
Stall	NO STALL AT 6.0 G LIMIT					0.6
Slats Open	11					
Buffet						
Stall		246.0	16050	5.2	336	0.5
Slats Open	11					
Buffet						
Stall		255.0	15850	6.0	343	0.52
	2 X 200 GALLON TANKS					
Slats Open	13	267.0	35875	3.4	470	0.8
Buffet		262.0	37125	2.2	470	0.8
Stall	NO STALL AT LIMIT G			5.0	496	0.8
Slats Open	13	219.5	36625	2.2		0.7
Buffet		219.5	36625	2.2		0.7
Stall		247.0	33225	3.8	524	0.7

# Indicates fuel reading in pounds remaining - Ship's system.

TEST DATA CORRECTED FOR INSTRUMENT ERROR

F-86F-40 USAF No. 55-3817

BUFFET AND STALL BOUNDARIES

Military

EVENT	Flight	IAS-Knots	Alt.-Feet	G	Fuel # Count-Gal	Aim Mach
Slats Open	13	190.0	37025	1.4		0.6
Buffet				2.2		0.6
Stall		198.0	35000	2.8	550	0.6
Slats Open	13					
Buffet						
Stall		282.0	35200	5.0	594	0.78
	CLEAN CONFIGURATION					
Slats Open	15	165.0	48600	1.5		0.7
Buffet		168.0	47100	2.0		0.7
Stall		188.5	45075	2.9	319	0.7
Slats Open	15	200.0	42600	2.0		0.8
Buffet		210.0	45575	2.6		0.8
Stall		234.0	42575	4.0	350	0.8
Slats Open						
Buffet						
Stall						
Slats Open						
Buffet						
Stall						
Slats Open						
Buffet						
Stall						
Slats Open						
Buffet						
Stall						
Slats Open						
Buffet						
Stall						

# Indicates fuel reading in pounds remaining - Ship's system.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

FEB 19 2002

MEMORANDUM FOR DTIC/OCQ (ZENA ROGERS)
8725 JOHN J. KINGMAN ROAD, SUITE 0944
FORT BELVOIR VA 22060-6218

FROM: AFMC CSO/SCOC
4225 Logistics Avenue, Room S132
Wright-Patterson AFB OH 45433-5714

SUBJECT: Technical Reports Cleared for Public Release

References: (a) HQ AFMC/PAX Memo, 26 Nov 01, Security and Policy Review, AFMC 01-242 (Atch 1)

(b) HQ AFMC/PAX Memo, 19 Dec 01, Security and Policy Review, AFMC 01-275 (Atch 2)

(c) HQ AFMC/PAX Memo, 17 Jan 02, Security and Policy Review, AFMC 02-005 (Atch 3)

1. Technical reports submitted in the attached references listed above are cleared for public release in accordance with AFI 35-101, 26 Jul 01, *Public Affairs Policies and Procedures*, Chapter 15 (Cases AFMC 01-242, AFMC 01-275, & AFMC 02-005).

2. Please direct further questions to Lezora U. Nobles, AFMC CSO/SCOC, DSN 787-8583.

Lezora U. Nobles

LEZORA U. NOBLES
AFMC STINFO Assistant
Directorate of Communications and Information

Attachments:
1. HQ AFMC/PAX Memo, 26 Nov 01
2. HQ AFMC/PAX Memo, 19 Dec 01
3. HQ AFMC/PAX Memo, 17 Jan 02

cc:
HQ AFMC/HO (Dr. William Elliott)

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

JAN 17 2002

MEMORANDUM FOR HQ AFMC/HO

FROM: HQ AFMC/PAX

SUBJECT: Security and Policy Review, AFMC 02-005

1. The reports listed in your attached letter were submitted for security and policy review IAW AFI 35-101, Chapter 15. They have been cleared for public release.

2. If you have any questions, please call me at 77828. Thanks.

JAMES A. MORROW
Security and Policy Review
Office of Public Affairs

Attachment:
Your Ltr 14 January 2002

14 January 2002

MEMORANDUM FOR: HQ AFMC/PAX
Attn: Jim Morrow

FROM: HQ AFMC/HO

SUBJECT: Releasability Reviews

1. Please conduct public releasability reviews for the following attached Defense Technical Information Center (DTIC) reports:

   a. *Flight Test Program for Model P-86 Airplane Class – Jet Propelled Fighter*, 2 December 1946; DTIC No. AD-B804 069.

   b. *Physiological Recognition of Strain in Flying Personnel: Eosinopenia in F-86 Combat Operations*, September 1953; DTIC No. AD- 020 375.

   c. *Phase IV Performance Test of the F-86F-40 Airplane Equipped with 6x3-inch Leading Edge Slats and 12-inch Extensions on the Wing Tips*, May 1956; DTIC No. AD- 096 084.

   d. *F-86E Thrust Augmentation Evaluation*, March 1957; DTIC No. AD- 118 703.

   e. *F-86E Thrust Augmentation Evaluation*, Appendix IV, March 1957; DTIC No. AD- 118 707.

   f. *A Means of Comparing Fighter Effectiveness in the Approach Phase*, October 1949; DTIC No. AD- 223 596.

   g. *War Emergency Thrust Augmentation for the J47 Engine in the F-86 Aircraft*, August 1955; DTIC No. AD- 095 757.

   h. *Operational Suitability Test of the F-86F Airplane*, 4 May 1953; DTIC No. AD-017 568.

   i. *Estimated Aerodynamic Characteristics for Design of the F-86E Airplane*, 26 December 1950; DTIC No. AD- 069 271.

   j. *Combat Suitability Test of F-86F-2 Aircraft with T-160 Guns*, August 1953; DTIC No. AD- 019 725.

2. These attachments have been requested by Dr. Kenneth P. Werrell, a private researcher.

3. The AFMC/HO point of contact for these reviews is Dr. William Elliott, who may be reached at extension 77476.

JOHN D. WEBER
Command Historian

10 Attachments:
a. DTIC No. AD-B804 069
b. DTIC No. AD- 020 375
c. DTIC No. AD- 096 084
d. DTIC No. AD- 118 703
e. DTIC No. AD- 118 707
f. DTIC No. AD- 223 596
g. DTIC No. AD- 095 757
h. DTIC No. AD- 017 568
i. DTIC No. AD- 069 271
j. DTIC No. AD- 019 725